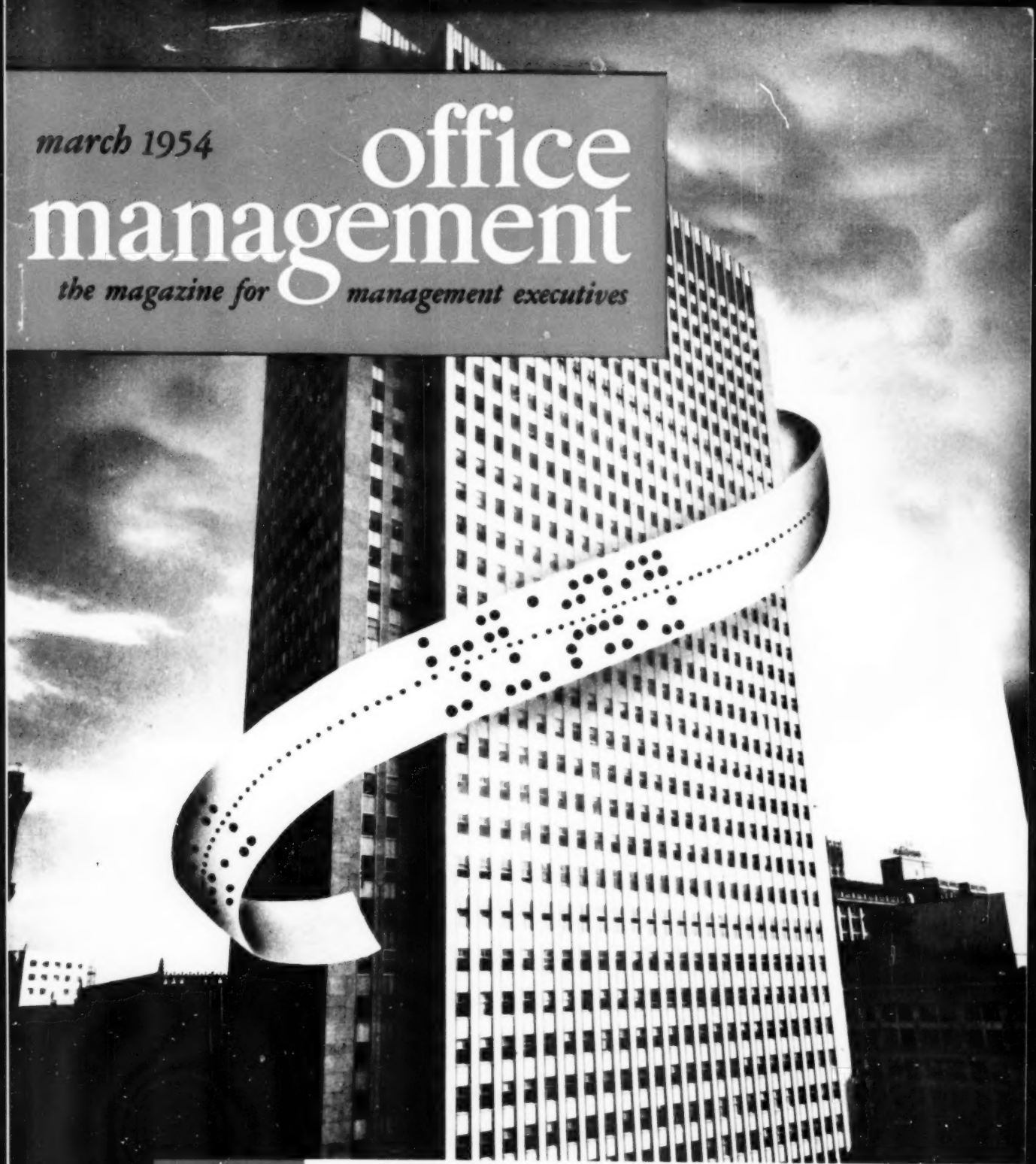
march 1954

office management

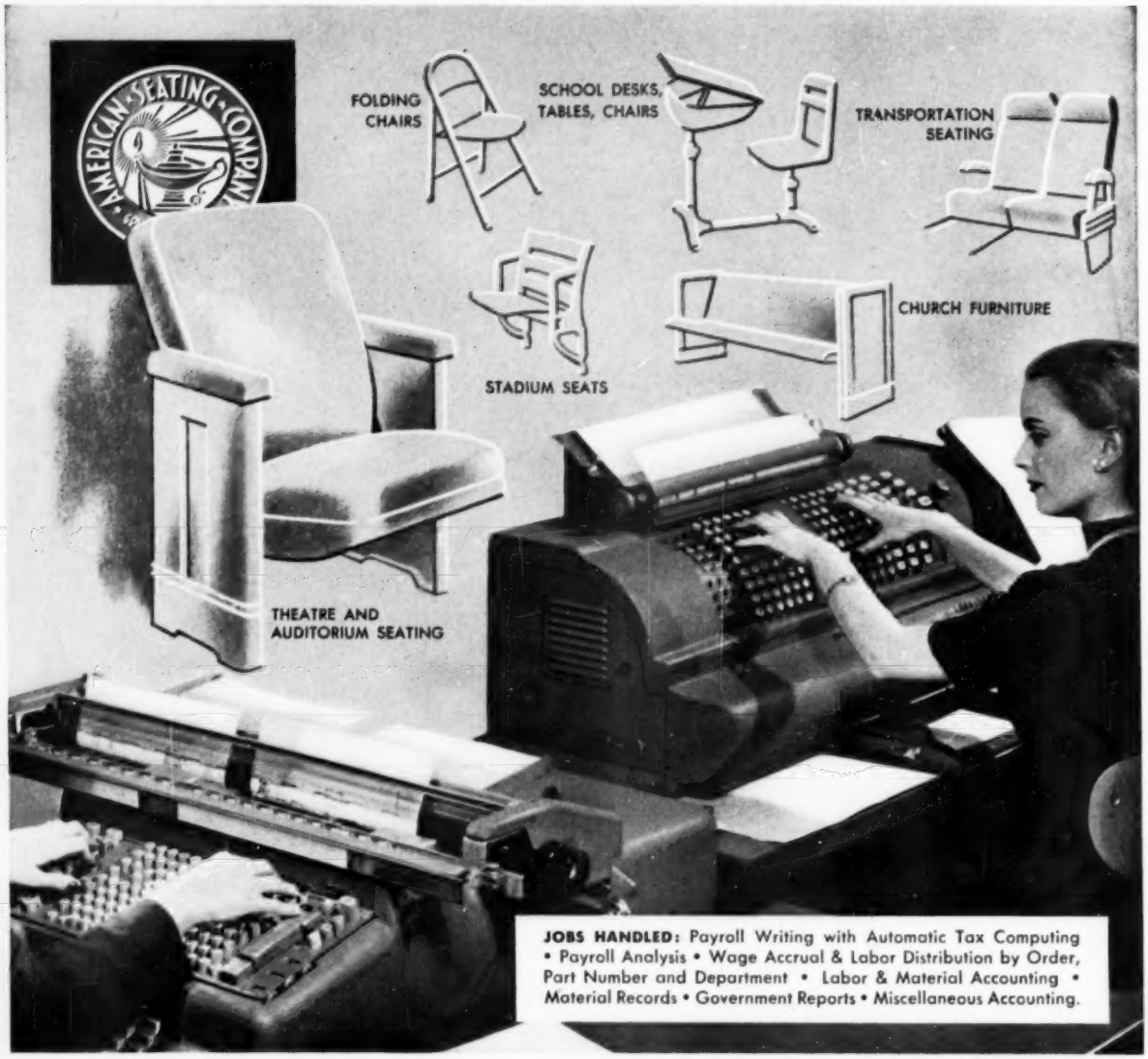
the magazine for management executives



Cover: Punched paper tape mechanizes offices at U. S. Steel

featuring

- U. S. Steel sets up automatic office—*first reports*
- Making buildings recession-proof—*by planning first*
- Automation: no easy answer—*common sense is still basic*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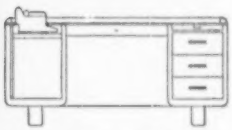
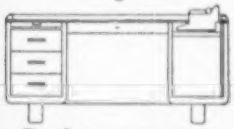
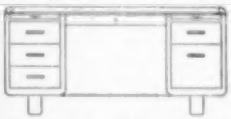


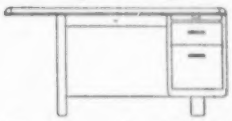
Reverse pedestal to get:



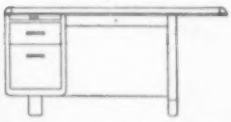
Replace typewriter pedestal with drawer pedestal to get:



Replace pedestal with end panel to get:



Reverse pedestal and end panel to get:



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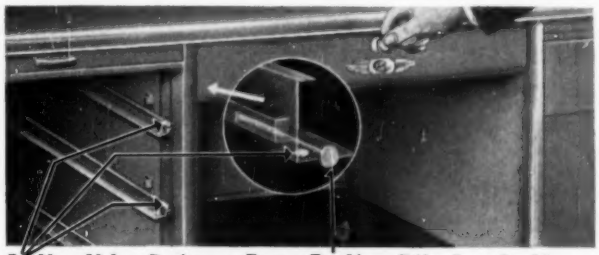
New ease of operation



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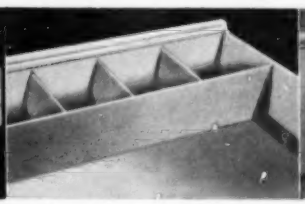
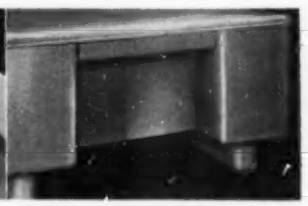


5. *New Roomier Utility Tray* **for more convenient storage. All compartments full height of drawer—no spillage.**



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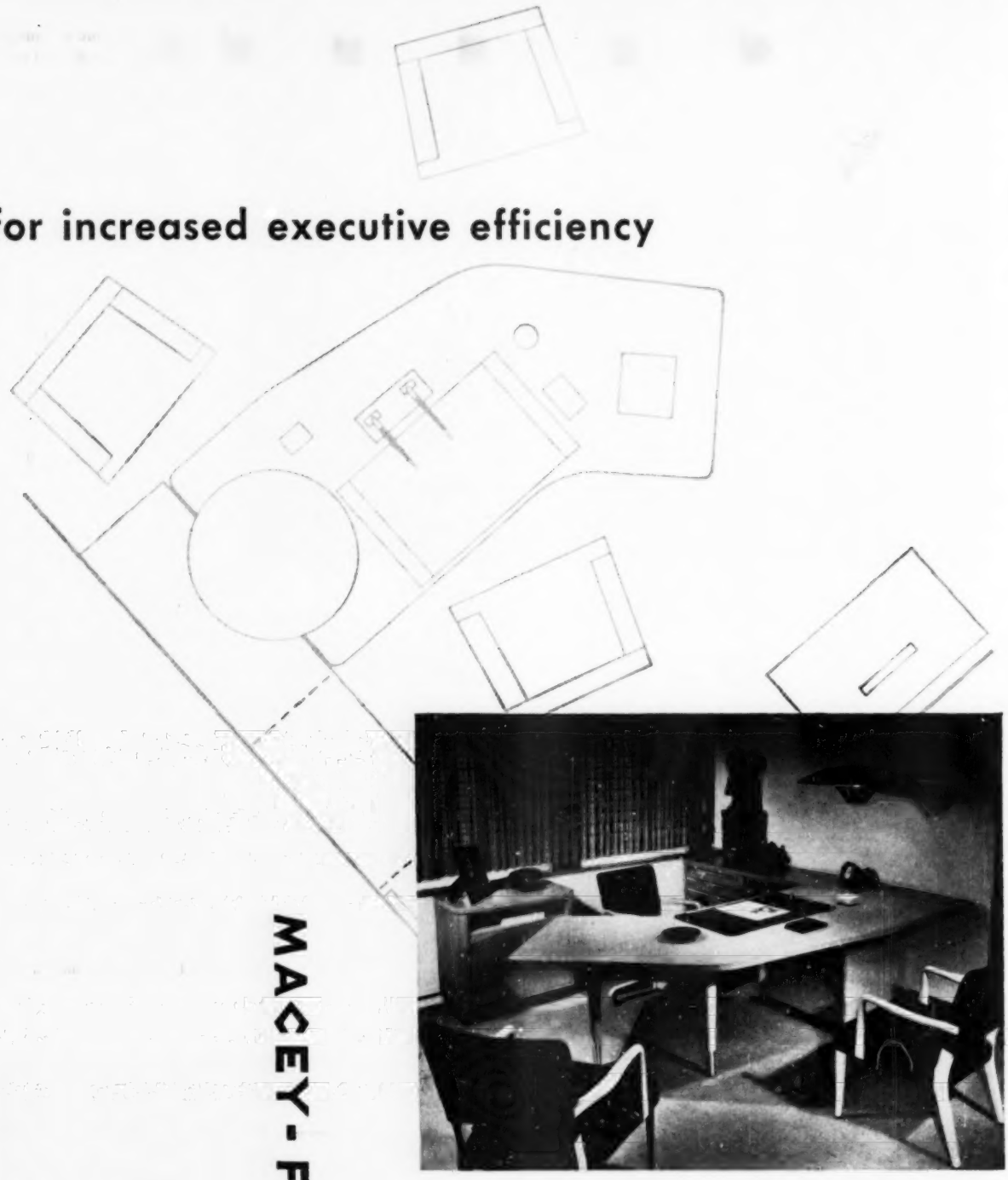

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office management

Office Methods, Equipment, Personnel, and Purchasing
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march, 1954

Volume XV No. 3

WE don't quite know what conclusion to draw from this, but as the editors were unanimously deciding to make the story of U. S. Steel's new automatic office the leading feature of this issue, we had a visit from one Lewis Glaser, a New Haven, Conn., goose farmer, who dropped in to report rising demand for his prime quality goose quill pens, made exactly as they were in King Arthur's day.

Seems lots of people still find them handier than ball pens, punched cards, or even the new magic tape of U. S. Steel!

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M. A. Geyer, President; Donald McAllister, Vice-President and General Manager; Thomas V. Murphy, Editor; Hugh Ward, Advertising Director; John M. Smythe, Midwest Manager; Robert M. Smith, Managing Editor; Robert Beeman, Walter A. Kleinschrod, Alvin M. Hartal, Marguerite Polyniak, Arthur D. Hickman, Robert G. Black, Associate Editors.

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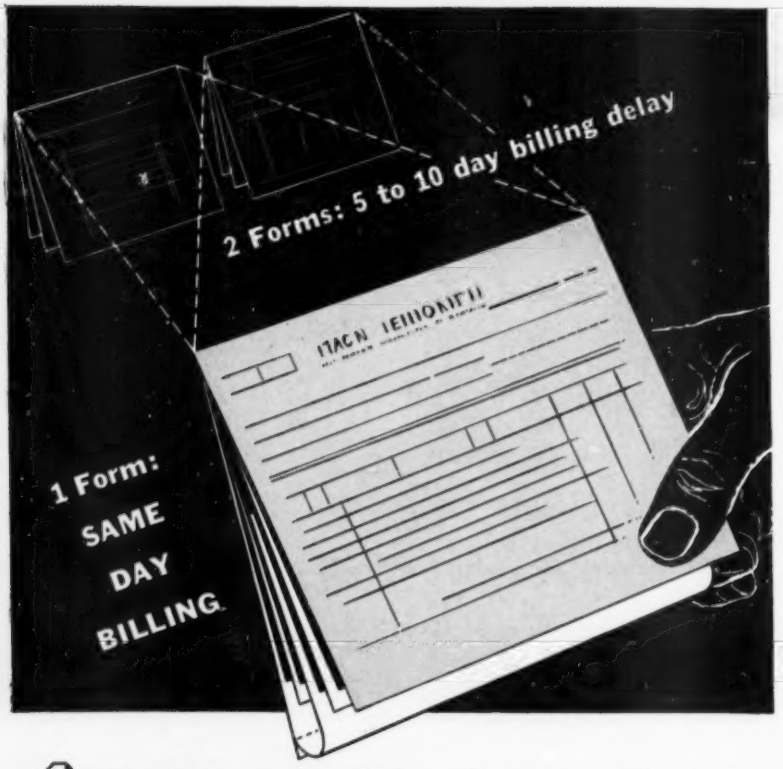

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"Forcing" Employees into Leadership Roles Pays, AMA Conference Told

"Forcing" people into positions of leadership often reveals previously unsuspected qualities of leadership within them, Dr. Eugene E. Jennings, assistant professor of industrial management, Wharton School of Finance and Commerce, University of Pennsylvania, declared at the national personnel conference of the American Management Association, held in Chicago February 15-17.

Psychologists, unable to agree on any one trait that sets the natural "leader" apart from others, are beginning to believe that characteristics which denote a leader in one situation may be quite different from those that would be necessary in another situation, he reported, suggesting that leadership is a "social phenomenon, arising from an interactional situation," rather than a purely personal thing.

This principle has significance for business in selecting and training leaders, Dr. Jennings said, since it implies that everyone is to a certain extent a potential leader, and that development of leadership should be regarded as a flexible process.

A "forced leadership" technique for training has been developed, he said, and in at least one test case, has proved more effective than the conference method. The system is based on a case study in which a particular human relations problem is presented to a group of trainees. Trainees are then divided into smaller groups of four to five each, with instructions to bring back individual group solutions to the problem presented, within a limited time. No one person is assigned to lead any of the groups, but in most instances some one person in each unit will take over.

In the second phase of the program, the same procedure is followed except that those who took the lead at the first session are all put in one group, while the others are distributed at random again. Those who were non-leaders at the first session are thus given another chance. This continuing separation of leaders and non-leaders continues until each trainee has at one time or another assumed the role of leader.

Advantages of "forced leadership" training cited by Dr. Jennings included development of democratic rather than autocratic leadership.

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Special Conference Approves "Formula" for Corporate Gifts to Universities

Unanimous approval of a five point "formula" for the guidance of corporations in giving financial aid to colleges and universities was given by nearly 400 corporation officers and executives at a special conference held recently in New York, which was sponsored by the President's Council of the American Institute of Management.

Key points of the formula are:

"1. Corporations should recognize their responsiblity to maintain the diversified structure and balance of higher education in this country as a part of the fabric of American life.

"2. Corporations be urged to set aside for educational and charitable purposes the full amount which is permitted and encouraged by the tax laws for such purposes.

"3. Corporations be urged as a basic policy over the years to increase their contributions to the constructive program of education so that they begin to balance their gifts for charitable purposes.

"4. It is recommended that corporation giving for educational purposes be as unrestricted as possible.

"5. It is recommended that corporations use the same care and diligence in their giving as they do in their usual business activities.

There was general agreement among both the educators and the business executives attending the meeting that commerce and industry must play a larger role in financing higher education, if privately endowed colleges across the country are to continue to play their present role in providing trained men and women.

"Corporations must recognize the stake which they have in our independent colleges and universities, not simply for the specific research they can perform or for the technicians and specialists they can train," Richard D. Weigle, president of St. John's College, Annapolis, said. "Rather they must have the vision to appreciate the role of the small liberal arts college, particularly in educating broad-gauge thinking leadership for business, government, church and community, and in perpetuating the spirit of inquiry and the free enterprise in ideas which have been the foundation of this nation's great tradition."

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Watson also builds a complete line of filing cabinets and courthouse, bank and hospital equipment.

"Entertainment" Deductions Face Double Hazard

"Business entertainment" expenses will not only be scrutinized much more closely for exaggeration of claims on income tax returns this year, but interpretation of what constitutes legitimate "entertainment" costs has been considerably tightened under a recent ruling of the U. S. Tax Court, according to the Commerce Clearing House.

According to a unanimous decision of the court, only that portion of entertainment outlay consumed by the taxpayer which differs from or is in excess of what he would ordinarily spend on himself is deductible from his Federal income tax return.

Thus, if a business luncheon costs an executive $10, only that portion of the cost which is in excess of what the executive would normally spend on his own lunch is deductible. If his lunch usually costs him $2.50, that portion of the $10 lunch check is considered personal expenditure, and so is not deductible.

Office Salaries in Chicago Still Rising, Survey Shows

Average salary of non-supervisory office workers in the Chicago area advanced to $60.93 in the last six months of 1953, an increase of 2.07 per cent over the first half of the year, according to a salary survey recently released by the Office Management Association of Chicago.

This represents a slowing down of the rate of salary advance over the first six months of 1952, in which the average salary had advanced 3.66 per cent over the last half of 1951.

The semi-annual salary survey was based on 35,999 individual rates in 44 payroll classifications, in the 219 firms submitting data.

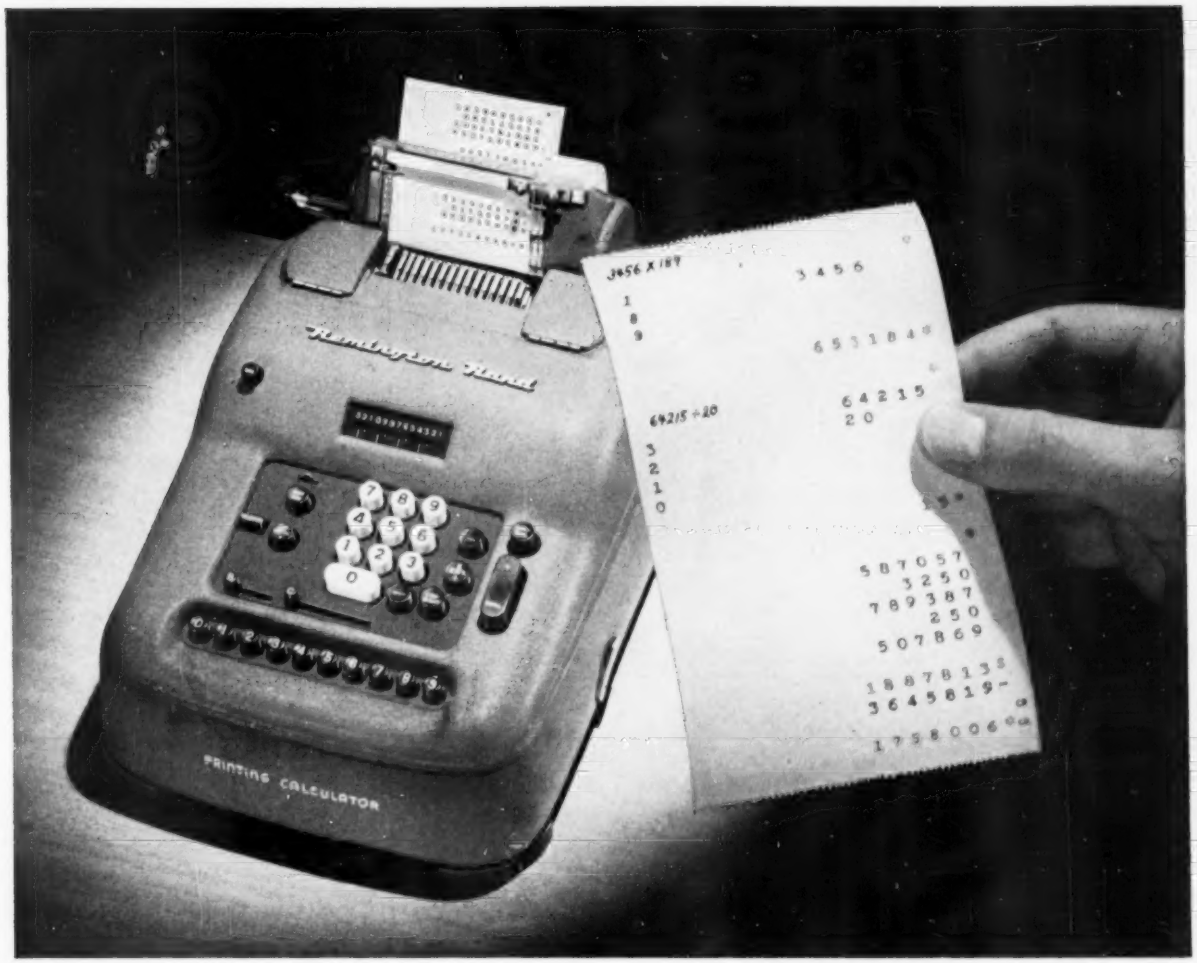
Other facts revealed in the survey include:

Over half the total office personnel of 96,734 employed in the respondent firms are women.

Almost half the companies covered work a full eight-hour day, while only one-quarter are on a 7½-hour day.

The number of companies giving a half-hour lunch period is greater than the number giving a full hour; the majority of companies give 45 minutes.

Most of the companies covered give new employees a pay increase after the first three months of employment.



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Nepco Foundation Reports New Scholarship Awards

John E. Alexander, Nepco Foundation president, Port Edwards, Wisconsin, has announced that a maximum of four new awards will be made again this year under its scholarship awards program. Eligible for awards under the program, which was first announced in 1953, are employees and children of employees of Nekoosa-Edwards Paper Company, and children of residents of Port Edwards and Nekoosa, regardless of place of employment. Each award is for $750 for an academic year, with a provision for renewal for three additional years.

Four local students are presently attending college with the help of awards made last year. They are Margaret Gilson, Viterbo College, LaCrosse, Wis.; Claude Schneider, Layton School of Art, Milwaukee; and Robert Votava and Keith Buchanan, University of Wisconsin at Madison.

J. L. May Adds Facilities

The J. L. May Co., 109 W. 19th St., New York, has announced that it has enlarged the department and added new equipment to accommodate the increase in orders for its carbonized tape social security envelopes.

Books and Pamphlets

1954 Pay Almanac

The purpose and scope of the 1954 *Pay Almanac,* recently published by Business Reports, Inc., are indicated by the following quotations:

"The coming months pose the biggest challenge to intelligent pay planning that you have faced in years.

"This will be the first year since '49 when the accent is on normal peacetime output instead of defense production—yet your workers will not recognize this fact in making their pay demands.

"It will be the first time in five years when there'll be more workers than jobs—yet top talent and experienced men will remain scarce, and you must continue to devise new imaginative ways to attract and hold key personnel.

"It will be a year when middle-income employees will seem to be all set, as taxes and living costs taper off—yet they'll actually become more and more dissatisfied, as the pay differential narrows between production and supervisory levels.

*Continuous cotton towels used by Briggs Indiana Corporation are serviced by Clean Towel Service of Evansville, Indiana

Multiple Unit Cotton Towel* Service Speeds-Up Briggs Washroom Traffic

Here's How Linen Supply Works . . .

You buy nothing . . . your linen supply dealer supplies everything. The low cost includes cabinets, pick-up and delivery, provides automatic supply of freshly laundered towels and uniforms. Quantities can be increased or decreased on short notice. Local service is listed in your classified book under LINEN SUPPLY or TOWEL SUPPLY.

• Automobile bodies are built at the big Evansville, Indiana plant of Briggs Indiana Corporation pictured above. Here more than 2800 employees are kept busy. To speed the heavy washroom traffic multiple units have been installed to furnish continuous cotton towel service.

Management has found they can keep plant washrooms cleaner and tidier with cotton towel service. Briggs employees, too, prefer the greater comfort afforded by soft, absorbent cotton towels. *More important, management has been able to make this contribution to good employee relations at no increase in cost.*

Whatever your towel problem . . . whether you operate a factory, institution, office or store . . . you can be sure that soft, gentle, absorbent cotton towels will do the best job in promoting employee morale, building customer good will, increasing tidiness in your washrooms and cleanliness among your employees.

For free booklet that tells how cotton towel service will save you money, increase sanitation, efficiency, write to Fairfax, Dept. D, 65 Worth Street, New York 13.

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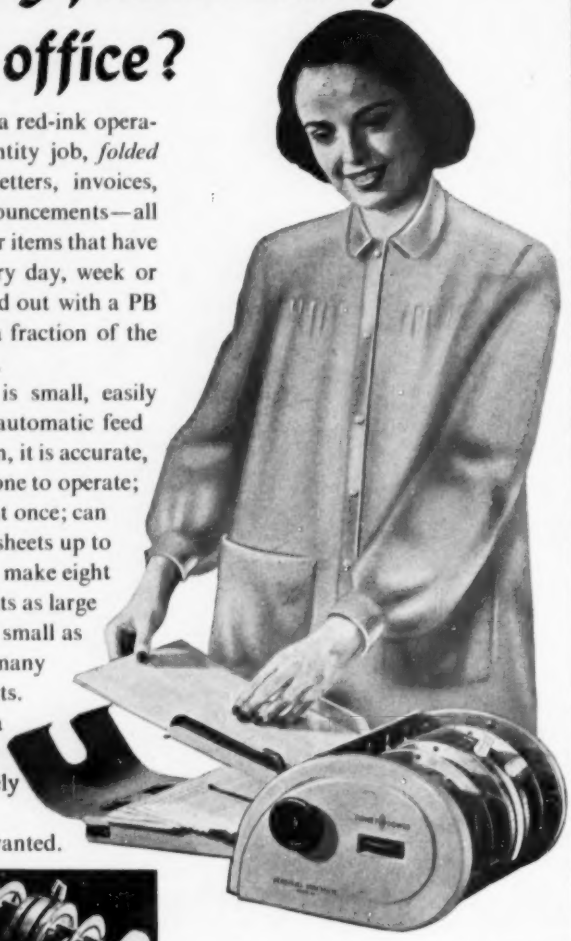
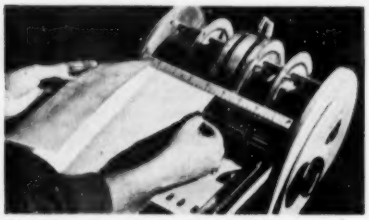
Anything folded today in your office?

Mark it down as a red-ink operation if it was a quantity job, *folded by hand!* Circular letters, invoices, catalog sheets, announcements—all these, and many other items that have to be gotten out every day, week or month, can be turned out with a PB folding machine at a fraction of the cost of hand folding.

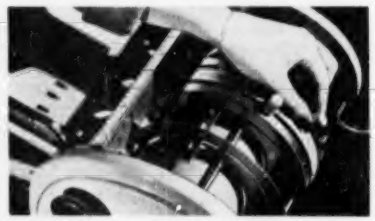
The FH model is small, easily portable. With semi-automatic feed and electrically driven, it is accurate, fast and easy for anyone to operate; can make two folds at once; can double-fold 8½ x 11 sheets up to 5000 per hour. It can make eight different folds in sheets as large as 8½ x 14 inches, as small as 3 x 3 inches, and of many different paper weights.

It takes less than a minute to set the FH for any job; you merely move two knobs to adjust for the folds wanted.





Easy! Fold sample sheet. Measure the folds on metal rule. Then . . .



Move indicator knobs to widths wanted . . . And it's ready to go!

Not much larger than a standard typewriter, and costing even less, the FH is a great convenience in any office, large or small . . . quickly pays for itself. Ask the nearest Pitney-Bowes office to show you—or send the coupon for a free, illustrated booklet.

Fully automatic model FM folds up to 19,000 sheets per hour.

PITNEY-BOWES
Folding Machines

Made by Pitney-Bowes, Inc. . . originators of the postage meter . . . 93 branch offices, with service in 199 cities in U.S. and Canada.

PITNEY-BOWES, INC.
2210 Pacific St., Stamford, Conn.

Send free booklet on Folding Machine to:

Name_____

Firm_____

Address_____

"It will be a year of tax relief—yet tougher Treasury attitude towards many practices will require skillful planning in dealing with the government.

"This Almanac points up the main pay trends to watch in '54. It spotlights the problems to expect and shows you what imaginative firms are already doing about them. It gives you an arsenal of comparative data to use in checking your pay practices with others in your industry and area. These statistics can be vital ammunition in dealing with your executives, white collar people, and production workers on pay problems in 1954."

This new volume is the work of William J. Casey, of the New York Bar; J. K. Lasser, C.P.A. and well-known tax expert; and Walter Lord, L.L.B. It is a book running to 166 pages, and it is section-tabbed for easy reference. The 1954 *Pay Almanac* is priced at $12.50, and is available from Business Reports, Inc., Roslyn, Long Island, N. Y.

Brief Listings

Selected Business Directories. A three-part list of biographical, publication, manufacturers, organization, and general directories, and of directories in each of 46 business fields. The three parts of the list are contained in the December, January, and February issues of *Business Literature,* issued by The Public Library of Newark, 34 Commerce St., Newark 1, N. J. The complete list is available from the library for 50 cents.

Building Sound Employee Relations, an address given by Dr. James F. Collins, of Universal Atlas Cement Co., at the November 4th luncheon meeting of the Office Executives Association of New York, Inc. It is priced at 25 cents and is available from OEA at 33 W. 42nd St., New York.

Long-Form Report Practice, a study of long-form audit reports, published by the American Institute of Accountants, 270 Madison Ave., New York 16, and available from that organization for $3. It analyzes 52 representative reports for the purpose of helping CPA's to compare their own reporting practices with those used in the reports analyzed.

Proceedings of the Second Annual Meeting of the National Microfilm Association, 19 Lafayette Ave., Hingham, Mass. The volume contains a

(*To page* 17)

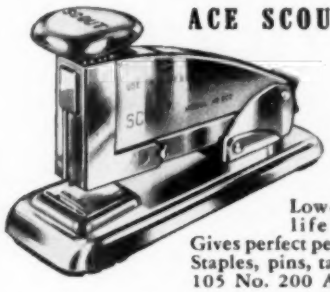
ACE PILOT

Gives extra years of stapling satisfaction. Staples and pins. Loads 210 Ace staples.

ACE STANDARD

Sturdiest most durable stapler . . made for a lifetime of perfect performance. Staples and pins. Loads 210 Ace staples.

ACE SCOUT



Low-cost, long-life stapler. Gives perfect performance. Staples, pins, tacks. Loads 105 No. 200 Ace staples.

ACELINER

World's finest 4-way stapler. 1. staples, 2. pins, 3. tacks, 4. hand fastens. Beautiful, streamlined design. Efficient, durable, most satisfactory. Loads 210 staples.

ACE STAPLES

Top quality. Assure best stapling performance. Highest tensile penetrating strength.

ACE STAPLE REMOVER

Snaps out clinched staples in a jiffy without damage to papers or fingernails. Durable, efficient, attractive.

ACE CLIPPER

Stapling Pliers

Big favorite with florists, dry cleaners, stores, schools, factories. Lightweight, easy action, perfect performance. Loads 210 staples.

ACE STAPLING EQUIPMENT has been known as *"the top quality line"* for more than a quarter of a century! Each product in its price class gives extraordinary value. *Any* ACE machine will give you smooth, dependable service no matter how long or hard you use it! Top performance and fastening efficiency are certain if only ACE STAPLER are used. Ask your stationer to show you the various ACE products pictured here. Choose the one that exactly fits your purse and your needs. That's the best way to be sure of getting a lifetime of real stapling satisfaction!

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The WORLD'S FINEST

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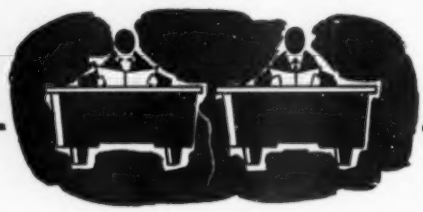
Advertisements in the

MAY N.O.M.A. CONVENTION ISSUE OF

office management

SAVE SHOPPING TIME FOR 13,000* MAJOR EXECUTIVES



The huge exhibit area at the Kiel Auditorium in St. Louis, where the 1954 NOMA Conference and Exhibit will take place May 23-27, makes it difficult for time-pressed executives to do justice to all pertinent exhibits.

Therefore, as is traditional each year, manufacturers will present their lines in the May NOMA Convention Issue which comes out several weeks before convention time. This gives executives a chance to evaluate equipment and supplies as they plan to visit exhibits which offer solutions to their managerial problems.

ADVERTISEMENTS IMPORTANT TO NON-ATTENDING EXECUTIVES

Thousands of top office executives will be unable to attend the NOMA Convention. To these important buying prospects, manufacturers' advertisements are vitally important since it is top management's responsibility to keep abreast of the latest developments in equipment and supplies.

NON-EXHIBITORS' ADVERTISEMENTS RECEIVE FULL CONSIDERATION

Both the attending and non-attending paid executive subscribers to OFFICE MANAGEMENT will read the ads of manufacturers whether or not their lines will be displayed at the convention. Non-exhibiting manufacturers should mention in their copy where their lines can be inspected, or invite further inquiry.

EDITORIAL CONTENT OF THE MAY N.O.M.A. CONVENTION ISSUE

A complete listing of exhibitors, conference schedules, advance story and background of principal speakers, articles on methods, systems, purchasing and personnel, including an interesting case history, will hold the attention of OFFICE MANAGEMENT'S paid executive subscribers. The "Tools of the Office" feature for this issue will be on general office furniture.

MANUFACTURERS—Inform the Nation's Top Office Executives on Your Lines Before Convention Time. Reserve Your Advertising Space Today.

CLOSING DATES: Set copy April 1
Complete plates, April 10

*Guaranteed Paid A.B.C. Circulation for first six months of 1954.

OFFICE MANAGEMENT
The Magazine for Management Executives
212 FIFTH AVENUE NEW YORK 10, N.Y.

Books and Pamphlets

(*Continued from page* 14)

number of papers on various aspects of microfilming. It is priced at $2 and is available from the Association.

The Recording & Statistical Corp., 100 Sixth Ave., New York 13, N. Y., has printed a booklet entitled *Bring Your Figures Up to Date,* which describes the statistical services offered by that organization. These include payroll accounting, accounts receivable, accounts payable, inventory control, sales analyses, market research, labor studies, personnel studies, and other services. The company also has offices in Boston, Chicago, Detroit, Montreal, and Toronto.

Parsons Paper Co., Holyoke, Mass., manufacturer of ledger and bond papers, and index-bristols, made of new cotton fibers, will send on request a booklet, *How to Get What You Need in Record Keeping Papers and Index Cards,* in which is featured, in addition to much information on the subject of office papers, an article on "How Long to Keep Records." The tables on file retention periods are from a useful booklet published by Bankers Box Co., Chicago.

Manufacturers' Catalogs

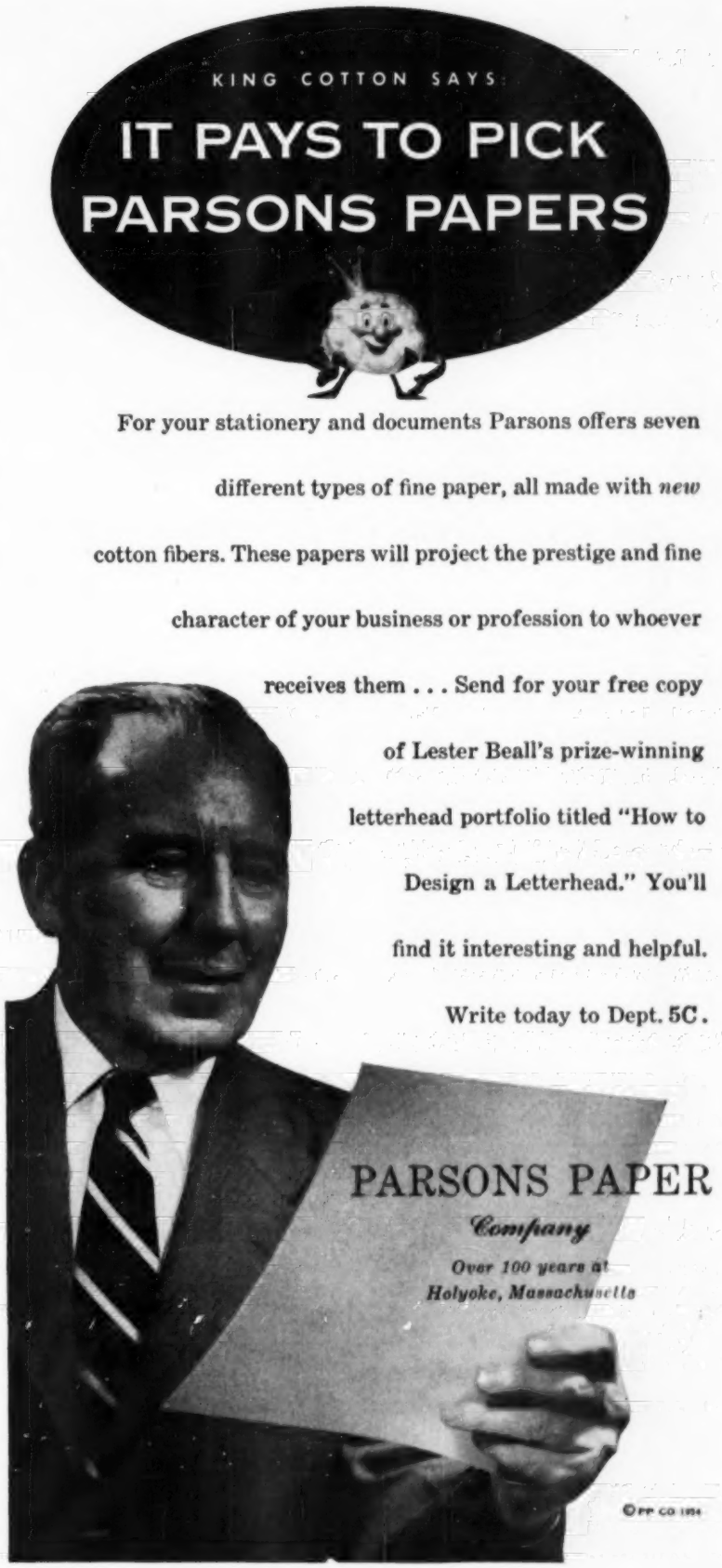
Payroll System

The S-K Forms Co., 1619 Walnut St., Philadelphia 3, has issued a four-page folder describing its S-K 301 payroll system. The system is prepared in four versions, for offices with 25, 50, 100, or 200 employees. The folder lists prices for these four versions, including prices of components.

People in the News

MATTHEW E. MEEK has been named assistant to the president of Underwood Corp., it was recently announced by President L. C. Stowell. Mr. Meek joined Underwood in 1949, shortly after his graduation from Yale.

K. CAMPBELL DALGLISH has been elected president of Pitney-Bowes of Canada, Ltd., succeeding Walter H. Wheeler, Jr., who has been elected to the newly created office of chairman of the board. Mr. Dalglish has been with the company since 1925, advancing to the branch managership at Toronto in 1935 and to the post of vice


KING COTTON SAYS:
IT PAYS TO PICK PARSONS PAPERS
For your stationery and documents Parsons offers seven different types of fine paper, all made with *new* cotton fibers. These papers will project the prestige and fine character of your business or profession to whoever receives them . . . Send for your free copy of Lester Beall's prize-winning letterhead portfolio titled "How to Design a Letterhead." You'll find it interesting and helpful. Write today to Dept. 5C.
PARSONS PAPER
Company
Over 100 years at
Holyoke, Massachusetts

president and general manager in 1941.

GERARD E. VENEMAN has been promoted to the position of general sales manager of the Nekoosa-Edwards Co., Port Edwards, Wisc., according to an announcement by President John E. Alexander.

Mr. Alexander also announced that *A. C. Remley,* vice president in charge of sales, will continue as head of the company's sales department, and that *C. A. Schiebler* will continue as assistant general sales manager, while *L. A. Gardiner* will remain as assistant sales manager.

CHARLES S. KERNAGHAN has resigned from his position as the vice president in charge of sales with the Waterman Pen Co., Inc., it was announced by President Frank D. Waterman. Mr. Kernaghan had been with the company for the last twelve years.

MICHAEL A. C. HUME has joined the management controls department of the New York office of Peat, Marwick, Mitchell & Co., according to an announcement from Frank Wallace, partner in charge of that department. Mr. Hume has specialized in management controls and systems work for the last eight years.

the
STRATOLINER
Series
BY
ORNA-METAL
a new design concept in metal office furniture
A distinct departure in steel office furniture design . . . beautiful . . . truly contemporary. Smart and distinctive . . . in keeping with today's, and tomorrow's, modern trend. All pieces color-coordinated to harmonize with any interior decor. Units shown are only a few of many.
Write for Brochure on Complete "Stratoliner" Series
ORNA-METAL, INC., 2412 SO. SEVENTH ST., ST. LOUIS 4, MO.

Coming Events

Office Management Association
of Chicago
Mar. 8-11
1954 OMAC Business Show
Conrad Hilton Hotel, Chicago

●

American Management Association
Mar. 9-12
General Management Conference
Fairmont Hotel, San Francisco

●

American Management Association
Mar. 18-19
Special Conference on Employee
Benefits
Hotel Roosevelt, New York

●

National Association of
Cost Accountants
Apr. 20-23
Seventh Annual Southern California
Business Show
Biltmore Hotel, Los Angeles

●

1954 Industrial Health Conference
Apr. 26-30
Hotel Sherman, Chicago

●

National Office Furniture
Association
May 8-11
1954 Convention
Hotel Sherman, Chicago

●

National Office Management
Association
May 23-27
Thirty-Fifth International Conference
Annual Office Machinery
and Equipment Exposition
Kiel Auditorium, St. Louis

●

American Management Association
May 24-26
Insurance Conference
Hotel Statler, New York

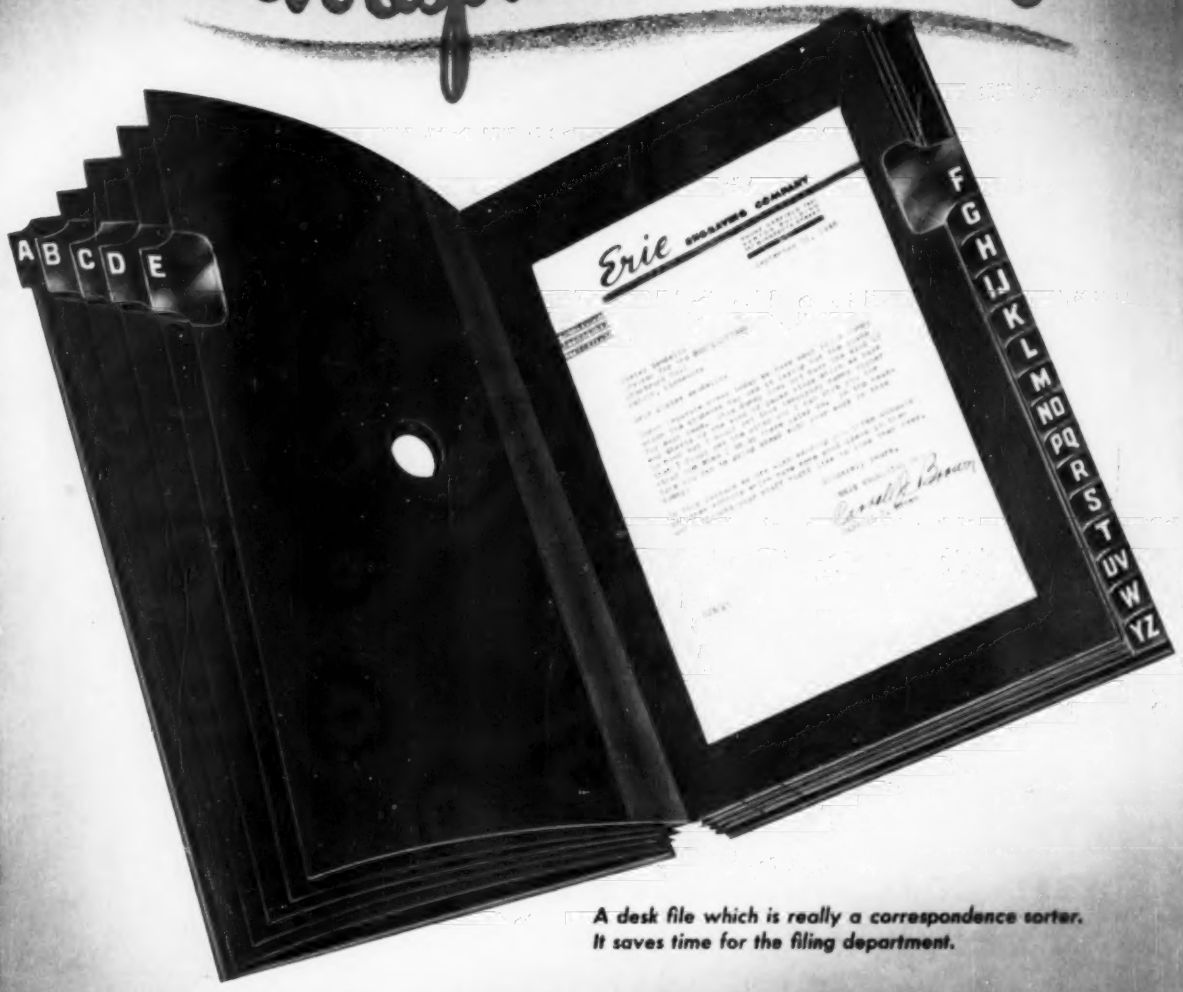
●

Life Office Management
Association
Sept. 27-29
1954 Annual Conference
Shoreham Hotel, Washington

●

Office Executives Association
of New York
Sept. 27-Oct. 1
Golden Jubilee National
Business Show
69th and 71st Regiment Armories
New York

SMEAD'S Correspondence Sorter



A desk file which is really a correspondence sorter. It saves time for the filing department.

Smead's Correspondence Sorter should be on every desk . . . It permits instant identification for filing and finding correspondence. It keeps correspondence confidential for signature. It keeps papers sorted during the busy day for immediate reference.

At the end of the day, papers are sorted and indexed ready for the filing department.

Smead's Tumble Head Celluloided Index is printed on both sides for sorting. This allows quick reference as index is visible from both sides.

CONSTRUCTION

Black cloth color — embossed cloth covers — Black fibre leaves — Celluloided Index — The Correspondence Sorter has an expansion capacity of over 20 inches. Furnished in letter and legal sizes — indexed A to Z and 1 to 31.

THE Smead MANUFACTURING CO., INC. - HASTINGS, MINNESOTA

FOR SALE BY STATIONERY STORES EVERYWHERE

NO. 10-21-52
PRINTED IN U. S. A.

equip your office with this timesaver

"IT GROWS AS NEEDED"

*ILLUSTRATED THE ALPHABETICAL WAY. READS LIKE A BOOK LEFT TO RIGHT.

SMEAD'S TELL-I-VISION SYSTEMS

FILES CORRESPONDENCE 5 WAYS

1. ALPHABETICALLY
2. NUMERICALLY
3. GEOGRAPHICALLY
4. CHRONOLOGICALLY
5. OR BY SUBJECT

Let us discuss your filing problems with you.

THE *Smead* MANUFACTURING CO., INC. - HASTINGS, MINNESOTA

Association News

THE CONTROLLERS INSTITUTE OF AMERICA will hold its Eastern Spring Conference at the Sheraton Park Hotel, Washington, March 21st to 23rd. Wayland S. Bowser, controller of the Blaw-Knox Co., Pittsburgh, will serve as moderator of a panel discussion of "fringe benefits." The Conference will also study taxation, securities and exchange regulation, the Federal budget, renegotiation, and executive compensation.

THE OFFICE EXECUTIVES ASSOCIATION of New York heard Sidney W. Koran, personnel manager of United Merchants & Manufacturers, Inc., discuss "Reducing Turnover Through Selection and Orientation of New Employees," at the luncheon meeting held on February 3rd at the Masonic Club in New York.

At the dinner meeting on February 17th, the OEA heard a speech on "Moving Ahead in Management," by Sterling W. Mudge, supervisor of training for the Socony-Vacuum Oil Co., Inc. The dinner was held at the Hotel Belmont Plaza.

THE RECORDS MANAGEMENT ASSOCIATION OF NEW YORK met on February 8th at 3 West 51st St., and heard a discussion on the subject, "The Relationship of Forms Control to the Records Management Program." The speaker was Jack Lilienfeld, chief of the Forms Control and Records Service Divisions, Department of Records, City of Philadelphia.

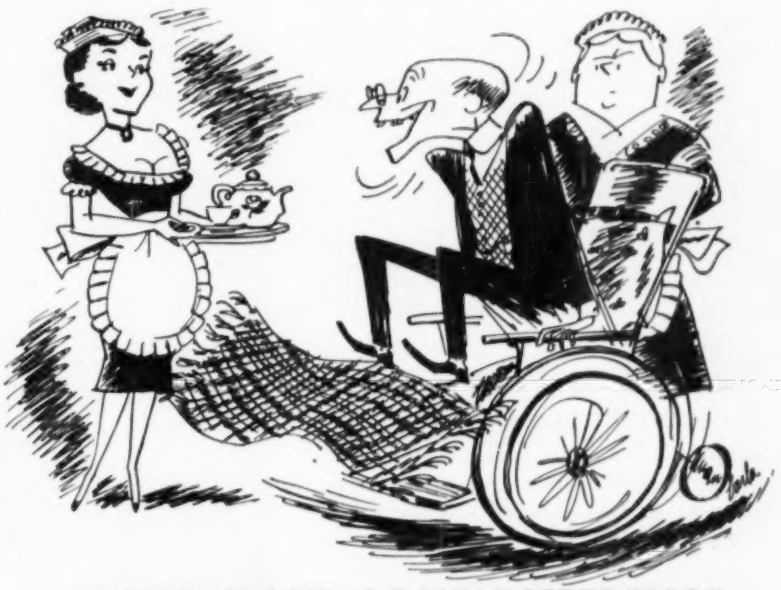
THE INDUSTRIAL DESIGNERS' INSTITUTE has announced that the executive committee of its New York Chapter has elected Jens Risom to be chairman for 1954, succeeding Robert L. Gruen. Other new officers are: Scott Wilson, of Wilson & Foord, vice chairman; Reta Shacknove, of Ferris & Shacknove, secretary; and Robert McKean, treasurer. The new chairman is president of Jens Risom Design, Inc., of New York.

THE NEWARK CHAPTER of the National Office Management Association met at the Military Park Hotel, Newark, N. J., on January 21st. The guest speaker was W. Miller Bennett, former NOMA president, who discussed "The Office Manager's Place in the Corporate Set-Up."

THE TRANSCRIPTION SUPERVISORS' ASSOCIATION of New York met at Whyte's Restaurant on January 11th. The speaker of the evening was Mrs. Pearl Lowery, chairman of the State Education and Vocations Committee, who was assisted by Miss Dorothy Warren, director of the New York House and School of Industry.

Mrs. Lowery spoke of the problems confronting the maturing woman in business and the means of overcoming these problems. Miss Warren described the training program developed by the House of Industry to help older women who have not worked for some years to regain office skills.

THE OFFICE MANAGEMENT ASSOCIATION OF CHICAGO scheduled an interesting experiment for its January 21st meeting at the La Salle Hotel. Instead of presenting a featured speaker, OMAC set up a number of discussion groups, with a limit of 25 set on the number of participants in any one group. The discussion subjects were "Smoking in the Office," "Rest Periods," and "Absenteeism." The discussions were set for the period between 5:30 and 7:00 o'clock, and were followed by dinner and entertainment. This meeting also was OMAC's annual Past-Presidents night, at which former presidents were honored for contributions to OMAC.



LOOKS MAKE SOME DIFFERENCE

When you want to attract attention — *and* interest — good looks count.

If your duplicating machine has been turning out dim, smeared or sloppy work, you may be having paper trouble — here's a suggestion.

There's an Eastern paper especially engineered for the type of machine you have. That means it has the best finish, the proper bulk, the exact amount of sizing necessary to produce clear, clean, sharp impressions *all the way through the run.*

Next time use *the special* paper Eastern makes for *your* machine. Any of the following papers will prove our point — result in good looks — and looks make *some* difference:

Atlantic Bond, Atlantic Duplicator, Atlantic Mimeo Bond, Atlantic Opaque, Manifest Bond, Manifest Mimeo Bond, Manifest Duplicator.

For sample sheets or packets ask your local Eastern paper merchant or write Eastern Corporation, Bangor, Maine.

use ATLANTIC BOND Business PAPER

EASTERN E

MADE BY EASTERN CORPORATION · BANGOR, MAINE

A simple, sure way to quiet office noise!

Bigelow's Cushionlok Carpet absorbs up to 90% of floor noise! Deadens echoed sound as well!*

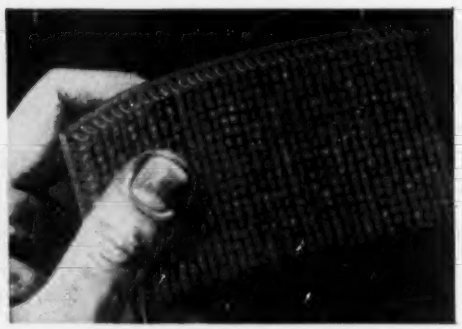
Cushionlok is a handsome, durable carpet designed by Bigelow to absorb floor noise and deaden reverberated sounds. It has such a high sound-absorption coefficient that any other acoustical treatment is hardly ever necessary.

Cushionlok is easy to install!

No need to lose a minute's work time, for Cushionlok goes down as business goes on. It has its own built-in cushion lining. It can be cut, pieced and relaid at any time.

Cushionlok saves over 73% in maintenance costs!

Statistics show that a professional cleaning job on Cushionlok costs only 16¢ per sq. ft. per year, whereas hard-surface floor coverings cost about 60¢ per sq. ft. per year.



Send for your sample of Bigelow Cushionlok, today. See for yourself what a really good buy you get with Cushionlok. So handsome—yet so practical for offices, stores, showrooms, hotels or any place where there's noise and traffic. Write on your business stationery to Dept. AA, 140 Madison Avenue, New York 16, N. Y.

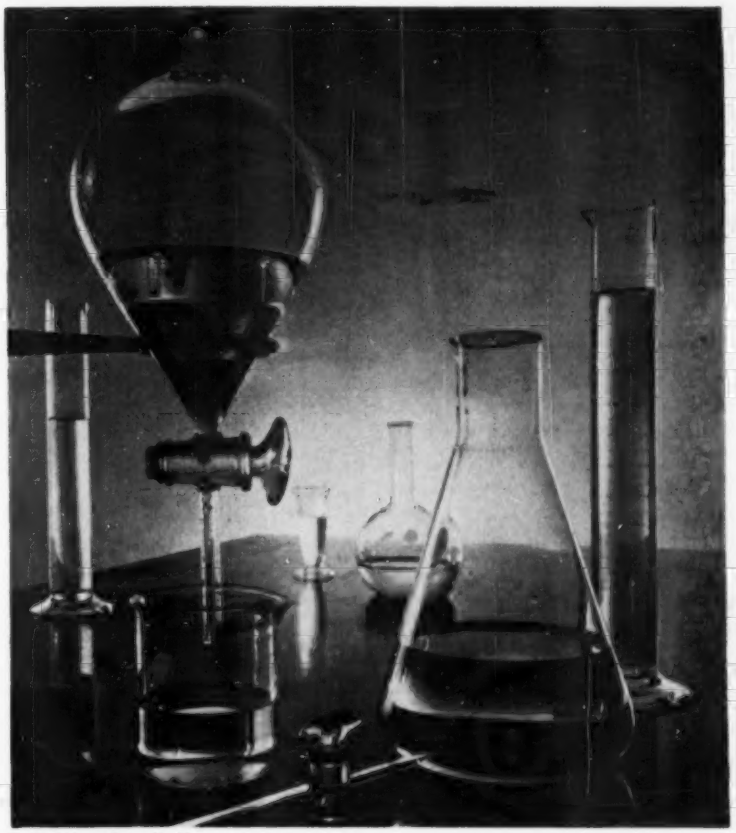
*REG. U. S. PAT. OFF.

Bigelow

Cushionlok Carpet

For Better Acoustics

editorial



A. Devaney, Inc., N. Y.

The laboratory approach

THE ADVANCE of the American factory to its present high efficiency has been paralleled by a similar advance on the part of the American office. But there are many thoughtful persons who feel that the advance which the office has made has been made the harder way, in that so many offices still neglect a laboratory approach to their problems.

Factory management years ago developed a healthy respect for scientifically controlled experimentation for the development of methods and products. The man in the laboratory coat has come to be as much a symbol in the factory field as he is in the medical profession. His counterpart in the office is far too often some person or persons untrained in scientific analysis and synthesis, and working on a principle that is little more than crude trial and error.

Factory mistakes can be very much more costly than office mistakes, but that should not excuse lack of truly scientific consideration of office problems. The best brains and the best experience procurable should be assigned to the task of checking, criticizing, and suggesting, and this task should be a continuing one, rather than one embarked upon only when some kind of emergency arises.

In office management today, we have the brains and the experience wanted for this task, but they are so often not assigned to it, or go into action only when something goes wrong! This business of keeping a constant check on methods and materials, of gathering and assaying data, and of testing conclusions is no minor job to be left to the amateur!

Part 1:

U. S. Steel sets up automatic office

A REVOLUTIONARY "common language" data processing system, which records all data at the point of origin, and makes it automatically self-perpetuating through all subsequent processing, was demonstrated by United States Steel Corporation at a special American Management Association conference held in New York February 25-26.

The system developed by United States Steel is based on a five-channel punched tape, to which all clerical operations throughout the company are keyed. Personnel are needed to make the original recording of data, but from that point on subsequent processing is handled mechanically, through combination of typewriters, calculators, and other office machines with automatic and electronic machines.

The special conference, which was held at the Astor Hotel in New York, featured five speakers from U. S. Steel, who discussed the overall theory on which the corporation has built its new program, and specific applications of the program. Following the presentations, closed circuit television was used for the first time at an A.M.A. conference to demonstrate the machines described by the speakers at work on repetitive routines involved in common office procedures.

First-day speakers, all of whom were from the Methods Planning Division of United States Steel, were: H. F. van Gorder, division director, whose subject was, "What Is Integrated Data Processing?"; H. W. Moore, staff assistant, who spoke on "Data Origination"; James Thomson, staff assistant, who discussed "Data Calculation and Distribution"; and L. W. Calkins, research engineer, who talked on "Conversion and High Speed Processing." R. W. Baridon, supervisor of communications for the United States Steel Methods Planning Division, discussed "Accurate, Fast Communications" on the second day of the meeting.

Exhibit slides were shown on a screen at various points in the talks to illustrate machines or processes described by the speakers. Mr. van Gorder, opening the program, described the basic concept on which United States Steel has built its entire program of handling recurring paper work with the greatest possible accuracy, and at the least possible cost. An abstract of his talk follows:

Integrated Data Processing

Integrated Data Processing is actually a fundamental in itself. It came into being because the solution to a basic problem was so obvious.

Business requires the recording and processing of data pertinent to procurement, to manufacture, and to the sale of its products.

These business requirements are increasing in volume and complexity, and simultaneously the lapse of time between events and the necessity for logical decisions based on these events is narrowing.

Our problem then is to meet these data processing requirements in a comprehensive and timely manner.

The solution is obvious when it is remembered that all data have their beginning, their day, hour, or minute of birth. Why not record these data automatically or manually at the time and place of birth on devices which preserve the data in mechanical form? This being done, require that all subsequent processing of these data be performed and preserved in mechanical form.

There are three points of difference in this from the conventional approach:

1. Original data are recorded *at their point of origin* in a mechanical form.
2. Once in mechanical form, data are processed exclusively in a mechanical manner.
3. All processing of data is integrated so that original data in mechanical form *serves all subsequent applications.*

To accomplish this, we must use available office machines in a comprehensive yet selective fashion.

This in turn requires a basic compatibility between different type of machines and machines of different manufacturers. A common language is required to transfer raw data mechanically between the various types of machines.

We have selected the five channel punched communication code for this purpose.

(Exhibit 1 was shown on the screen at the conference at this point.)

The common language of the office machine heretofore

The editors of *Office Management* feel that the special AMA conference in which speakers from the United States Steel Corporation outlined the way repetitive office processes have been mechanized in that company was so important that unusually extensive coverage of the entire conference has been given. This instalment covers the papers presented by the first two speakers, Mr. van Gorder and Mr. Moore. The April issue of the magazine will cover the talks of the last three speakers on the program.

The editors wish also to thank officials of the United States Steel Corporation and the American Management Association for the cooperation which has made it possible to present this report to our readers so soon after the close of the conference.

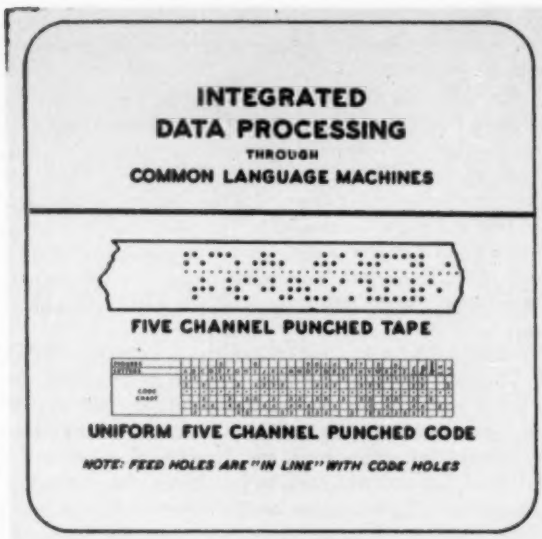


Exhibit 1

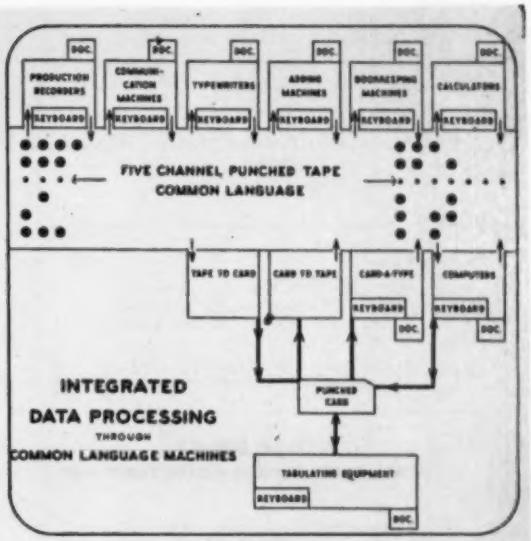


Exhibit 2

has been the operator who provides the link between machine and data. Five hole punched tape now becomes a common language link between original recording and all subsequent data handling. The human link between data and machines is now restricted to the original recording of original data.

Five channel tape is punched in uniform communications code. Office machines now using the same code include production recorders, adding machines, bookkeeping machines, typewriters, calculators, tape to punched card, punched card to tape, and high speed data processing equipment.

"Open" or "blank" codes are flexible for functional purposes such as stop — carriage return — line feed — plus minus — tabulate, etc. This code has always been standard on our telegraph systems and requires no revision or adjustment in either communication or office machines using five-channel tape.

Our concept of using this punched tape common language link between original data and subsequent data processing is:

1. Record data at the point of origin on office machines which create punched tapes or cards as the automatic by-product of the recording operation.

2. Process original and subsequent data on office machines which read and punch tapes or cards, so that:

All data is self-perpetuating

This concept is the basic fundamental of Integrated Data Processing through Common Language machines. Its purpose: to put dynamic life into data at its inception. Its use: self-perpetuation of data during the useful life of those data.

Studies have shown that the large majority of manual operations in an office result from repetitive entry of the same data.

So we have emphasized mechanization of repetitive data. This required the creation of a mechanized form of data such as the punched card, and the necessity to have these mechanized data in a common form or language which could be understood by all machines, including the punched card variety.

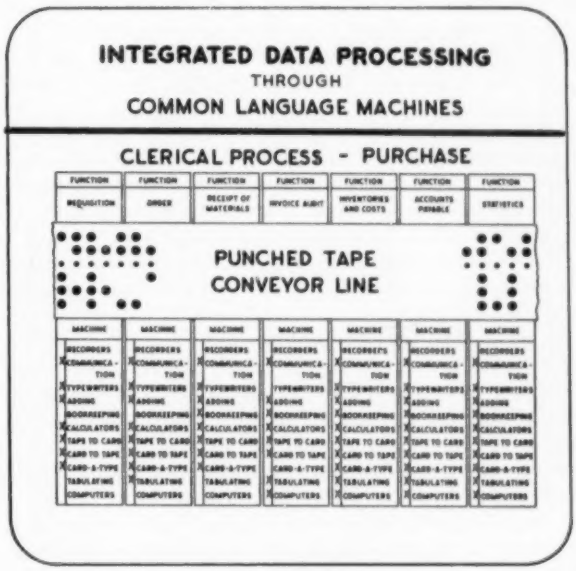


Exhibit 3

Five channel punched tape was chosen becasue it was serving the communications field, and because communication is an important factor in both centralized and decentralized data processing.

Let's define "common language." Common language in Integrated Data Processing has the following qualities and abilities:

It is a recording medium that (a) comprehends the 26 letters of the alphabet, the ten decimal digits, and a minimum of special characters and functions; (b) has the ability to directly mechanize the transfer of raw data between office and communication machines manufactured by different suppliers.

In distinction, the "native language" of office machines are all mechanized or non-mechanized recording or transfer media other than "common language." (*To next page*)

INTEGRATED DATA PROCESSING
THROUGH
COMMON LANGUAGE MACHINES
CONCEPT
① RECORD DATA AT THE POINT OF ORIGIN ON OFFICE MACHINES WHICH CREATE PUNCHED TAPES OR CARDS AS THE AUTOMATIC BY-PRODUCT OF THE RECORDING OPERATION
② PROCESS ORIGINAL AND SUBSEQUENT DATA ON OFFICE MACHINES WHICH READ AND PUNCH TAPES OR CARDS
SO THAT
"ALL DATA IS SELF PERPETUATING"

Five channel punched tape is of course a serial or continuous form of record. In order to provide for a unit type record, we have also incorporated the five channel punched code into a unit card record by punching the code along the edges of the cards.

To summarize: Integrated Data Processing common language is the five channel tape or edge punched card. Native languages are punched tapes other than five channel: punched cards, magnetic tapes, gears, levers, dials, etc.

(Exhibit 2 was shown here at the conference.)

What are some of the logical steps in establishing integrated data processing through common language machines? A review of the machines and functions of the clerical process will prove helpful.

Shown here is a conveyor line made of the common language punched tape. The functions of the clerical process are progressive stations along the conveyor representing logical entities of clerical operations. Below each function is a list of the common language office machines previously discussed.

(Here Mr. van Gorder discussed, with slide diagrams, processing of data in the areas of sales, production and purchasing. (Exhibit 3 shows the purchasing process.)

Now, in conclusion, what are the logical steps which we follow in establishing Integrated Data Processing through Common Language Machines?

No attempt can be made to provide detailed instructions which could have universal utility. However, the method of application shown here is the basis for our detailed planning.

1. Appoint a coordinator for Integrated Data Processing.
2. Prepare a master chart of the clerical processes, defining: (a) Major functions within the fundamental clerical processes of Sales, Production, and Purchasing; (b) Data received, originated, and produced by each function.
3. Establish two basic rules: (a) Record data at point of origin on office machines which c r e a t e five channel punched tapes or tabulating cards as the automatic by-product of the recording operation; (b) Perpetuate original and subsequent data by means of office machines which read and punch tapes or cards.
4. Select the functions which are to be mechanized in the current year.
5. Mechanize the selected functions within the framework of rules 3a and 3b.
6. Plan the mechanization of all remaining functions in sequence from the beginning to the ending functions.
7. Mechanize these remaining functions in sequence and within the framework of rules 3a and 3b.

Following the morning session at which Mr. van Gorder spoke, a panel discussion on his talk was led by James M. Kalbach, Jr., of E. I. duPont de Nemours & Co., Inc., Harold Price, of Price Waterhouse & Co.; and John Walrath, of the General Electric Co.

Data Origination

At the afternoon session, H. W. Moore spoke on "Data Origination." A digest of his remarks follows:

Automatic office machines have been available for some time, but their scope has been limited because each machine had to be set in operation and receive the information from which it worked —the data it was to process—from a human operator. There was no continuous, automatic flow of facts, statistics, figures from one machine to another.

United States Steel, through its project in streamlining office operations, has changed that by use of a "common language" which channels information directly from machine to machine. As one machine is fed data it simultaneously performs whatever its function is on those data, and also records the original data and its processing of those data on a punched tape which can transmit the information to the next machine in sequence, and also give that machine the necessary directions to perform whatever work is required to process the data one step further.

This is accomplished by means of a five channel punched paper tape which can record both numbers and figures as well as simple directions in code form. This tape, punched by each machine in sequence, thus goes on to feed information to the next machine.

Thus United States Steel has developed a system under which information is channeled from the simplest of automatic machines to the most elaborate with a minimum of human operations.

A few of the most elaborate office machines cannot be directly activated by the "common language" used for the majority, the five channel punched paper tape. For these more complicated machines, converters are available, through which five channel punched paper tape can feed its information to six, seven, or even eight level punched tape, or to punched cards. Ultimately, there are converters which will take information from punched cards (information already converted from punched tape to punched cards), and transfer it to magnetic tape. Then, the information basically entered on such a simple machine as a typewriter or adding machine which—while performing its function in the chain—also started the data on its automatic path by punching a paper tape, may ultimately enter, still automatically, into the calculations of the electronic computer.

This is the automatic office as it is actually being developed today.

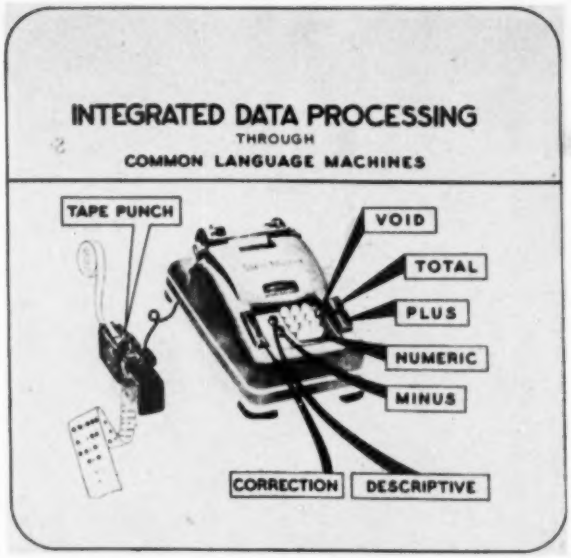


Exhibit 4

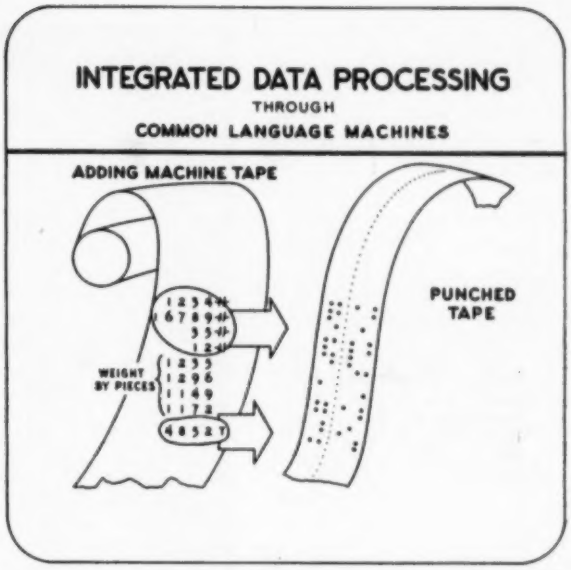


Exhibit 5

Very few mechanical systems are sufficiently flexible to permit complete clerical processing of the functions involved in Sales, Production, and Purchase. Usually, we are forced into using several different types of machines in the various phases of our clerical operations. This indicates then that we are manually transcribing data into each of the processes. With the Integrated Data Processing concept, the transcription of data will be automatic with a higher degree of accuracy and control. It is stated that to attain a greater use and facility over all data, we must:

1. Record data at the point of origin on office machines which create punched cards or tapes as the automatic by-product of the recording operation.
2. Process original and subsequent data on office machines which read and punch tapes or cards so that all data are self-perpetuated.

This is the basic fundamental of Integrated Data Processing through Common Language Machines.

My responsibility today lies primarily with recording of data at the point of origin.

The common language machines which I will discuss:

1. Adding machines.
2. Production recorders.
3. Typewriters.
4. Bookkeeping machines.
5. Cash register units.
6. Communication machines.

(Here Exhibit 4 was shown.)

How does the adding machine fit into the picture as an originaling machine?

A conventional adding machine can be connected with a tape punch. Codes representing the digits 0 to 9 and required control are punched into a tape by the punch simultaneously with operation of the machine. For instance, if the numerical nine key is depressed on the keyboard, holes representing the code for number nine will be punched into the tape.

The tape will be fed through the reader on a machine of another design in a succeeding operation. It provides the linkage between the two machines.

In punching the tape, there must be specific codes that cause subsequent machines to perform certain functions. Most prominent of these functions are: tabulate, stop, and carriage return.

In addition to the standard keyboard, a void key is required to void the codes that have been punched into the tape in error.

The standard non-add key will be used as the descriptive key. It is descriptive in the sense that it can be used for identification purposes, such as order number, invoice number, size, etc.

(Here Exhibit 5 was shown at the conference.)

Shown is a representation of recording production in a steel mill. With slight modifications or variations, it might be used in any other type of operation.

Let's assume then that the first number shown on the printed tape in the illustration is the order number; the second, the code identifying the product; third, equipment number on which material is being produced at this stage; and fourth, its size. These data are probably taken from the original order, and all of them are descriptive in nature. As a result, these are non-add data, and are identified as such by the non-add symbol.

Now the recording of the production is about to start. In the illustration, the individual weights of the pieces are recorded as they pass over the equipment, then, the total of the production for the order is taken.

The four elements and the total are data that are essential in subsequent operations of an integrated data processing system. Individual piece weight is required only on the printed tape for reference purposes.

In addition to the four elements and the total that have been punched into the tape, control codes are interspersed which direct machines in succeeding operations to perform certain functions.

Let's follow through on a succeeding operation which we will assume involves a bookkeeping machine. The punched tape produced on the adding machine is processed through the reader on a bookkeeping machine. The codes

(*To page* 40)

Today, office managers must let go of the tendency to do things themselves, start getting things done through others.

The office manager's come a long way to date

Where does he go from here?

by Alfred H. Dorstewitz
President, Office Management Association of Chicago

(This article is based on excerpts from a speech given by Mr. Dorstewitz at the Office Management Conference sponsored by the University of Illinois last fall, during the 25th Anniversary Year of the Office Management Association of Chicago.)

THERE WAS A TIME when business meant one-man management, when there were few corporations, no holding companies, no syndicates. Men like Vanderbilt, Rockefeller, Ford, Cyrus McCormick did the whole management job themselves, acting as Sales Managers, Production Managers, Clerical Managers, Engineers, and even scientists.

Business grew until it was no longer possible for this one man to handle everything, so he chose another person to help him and delegated the inside office work to this new employee. It was his duty to handle the books of account, employment problems, purchase of equipment, systems, payroll, etc. This begins the story of the Office Manager, who was not known by that title, but mostly as Chief Clerk or "right-hand-man."

As business continued to expand, it became in turn impossible for the "right-hand-man" to continue handling all the details of these various duties, so departments under supervisors who would report to him were created. It became his prime duty to coordinate these departments into a smooth running efficient office. He was given the title of Office Manager and made part of management. He had gained recognition as a leader, and now authority, compensation, and a voice in top management were his.

To understand what is expected of the office manager, we must know what the profession is today.

Office management today is a science, a science of coordination of certain clerical facets of business. It is an art, an art of getting the most out of people, systems, equipment, money, space; an art of delegation and follow-through.

Today, we look on Office Management as Business Administration, and it is a growing trend to call this Administrative Management.

Today, an office manager can't do all the phases of office management himself. He must segregate the important branches, such as Physical — Personnel — Service — Monetary, and working through others, coordinate the entire operation.

As a specialist rises from direct producer to manager he must let go of his tendency to do things himself and start getting things done through others. The difficulty of shifting one's emhpasis from personal production to the production of others is great. It is a vital shift, however, and

the ease and completeness with which it is made is one of the criteria of management effectiveness.

The office management profession must be defined then as administrative and must hold the authority that goes with executive management.

So, let's make the profession mean something. Let's think of office management as an art or a science that requires top level individuals who are capable of the authority that should be vested in them.

As I see it, there are four general fields of activity for raising the level of the Office Management profession, and they are:

1. What can management or business do?
2. What can the office manager do?
3. What can colleges or universities do?
4. What can associations do?

Let's take the first—what can management or business do to help you?

1. They can make the title mean something by considering office management as executive management.

2. By elevating their thoughts and requirements of an office manager, they can justify higher salaries and can therefore demand a higher calibre of person.

3. Distinguish between a manager and a worker, bearing in mind that an employee who is so busy with routine clerical duties that he has no time to see what is going on in the office cannot possibly do a good job of managing.

4. Give him the authority that is so necessary to be an office manager.

5. Business should demand that the office manager keep abreast of new ideas in his field by meeting others in the same capacity, through association work. He should visit other offices, to see how they handle their problems.

6. Business should send him to conferences, equipment shows, methods clinics.

7. Management should be sure that he is receiving all necessary publications that have reference to his field of work.

8. Management should request that he continually expand his understanding of the business so that when he is needed at a higher level, he will be ready to fill the bill.

9. It should expect him to be a student of human relations—one who understands people, one who knows how to make people work together, and one whom the people respect and for whom they will extend their efforts.

10. Business should quit trying to make a "silk purse out of a sow's ear." If the man is not a real Office Manager, it should get one who is.

Now, let's look at the office manager himself. What can he do to raise his level? Managers must realize that only through their own efforts will management automatically raise its sights on our important profession.

1. Be an office manager. If you hold that title and are not part of top management, you are not an office manager.

2. Dress like an executive.

3. Set an example for those you manage—people don't grow up, they mimic their supervisors.

4. Be a leader—deserve recognition.

5. Observe—a good manager knows what is going on at all times. He sees the things that need to be done and calls them to the attention of the person who is responsible, and then follows up to see that they are done.

6. Be human; know your people and understand why each individual reacts differently.

7. Educate yourself in every possible way so that you are cognizant of the newest methods, systems, equipment, ideas, shortcuts.

8. Observe what other offices are doing.

9. Set your sights to be an administrator, and then make business recognize you because of your accomplishment.

What can colleges or universities do to raise the level? A great deal has been done by higher education, but much more can be done to help the profession. They can:

1. Make it a certificate or degree course.
2. Set their sights to Administrative Management.

(*To page* 78)

In yesterday's offices, the "chief clerk" or "right-hand-man" performed the managerial function, but today office management is reaching the administrative level.

Building Service Planning Council aids in

Making buildings recession-proof

ONE OF the unhappier consequences of a "boom and bust" cycle, or even a "prosperity and recession" cycle is that most companies make their heavy capital investments in the boom phase when costs are exorbitantly high, and then suffer additional penalties beyond normal loss of income during the bust phase because of high amortization rates stemming from the original heavy outlay.

If excessively high maintenance costs are added, it can often prove a crippling burden to the company owning the property.

This was in the last depression particularly true of office buildings, built in the boom of the 'twenties. During the depression that began in 1929, operating expenses of the office buildings constructed during the boom days dropped only 13.5 per cent, but net income dropped 65 per cent. These were average figures so, obviously, the buildings that were the least economical to operate, or that were least attractive to tenants able to pick and choose office space, were even more seriously handicapped — handicapped so severely that 50 per cent of the office buildings in the United States were forced through receivership during the worst period of the '29 depression.

This is a problem that confronts every company planning to build its own office building, and rent some space to tenants. Yet the average company, contemplating construction of its own headquarters for the first time, has no personnel with an extensive knowledge of building management or building planning. Its procedure is to employ an architect, and turn major responsibility over to him.

This is, of course, the only procedure possible—but it is not necessarily the entire procedure. After all, the office buildings that went through receivership during the great depression were all designed by competent architects. The architect's role is to design a good building, adapted as closely as possible to the special needs and requirements of the owner. But if the owner himself is inexperienced as a building manager, costly mistakes and errors can be made in the design of the building—mistakes and errors which not only increase initial cost, but also burden the maintenance of the building throughout its life.

It is to guard against this situation that the Building Planning Service Council of the National Association of Building Owners and Managers was created in 1924. Its function is to serve as an advisory group to architects and building owners in the planning stages of a new building, with emphasis on making the completed building function as economically and efficiently as possible.

This is not an invasion of the domain of the architect, although it may seem so at first glance. An architect's assignment is to design an efficient and workable building; it is not necessarily to create a "depression-proof" building; often the architect's experience would not enable him to do so. For example, one of the many items which can affect a building's maintenance costs very sharply is the way the heating lines are laid down. Most buildings which rent some space to tenants and are not completely owner-occupied will have some tenants who either regularly or occasionally work at night. In the average building, those particular tenants could be given heat only by keeping the entire building heated, whereas, if the possibility of having to keep individual offices heated is taken into consideration in the planning stages of building design, it is possible to incorporate a special steam line from which connections may be made into those offices requiring heat after normal working hours.

Anticipating specialized needs of individual tenants is not the concern of the architect, and would not necessarily be taken into consideration by the company which has never before constructed a building, but it is exactly the field in which the Building Planning Service Council operates so efficiently. Similarly, thinking in terms not of the building on its opening day, but of the building as an entity that must run efficiently and economically over a twenty-to-thirty year period, no matter what happens in the general economic picture, the Council may advise architect and owner to so arrange elevator banks that a portion of the elevators can be shut down in times of low tenancy without affecting essential service, to avoid excessive use of bright metals in building decoration, with their consequent high incidence of maintenance costs, etc.

Serving in this fashion the council has been responsible for reviewing plans of such outstandingly successful office buildings as the Chrysler Building and Salmon Tower in New York, the Penebscot Building in Detroit, the Board of Trade, Field, LaSalle, Wacker, and Hartman Buildings in Chicago, and the Wenzlick Tower in St. Louis. Among its more recent jobs have been a review of plans for the Mutual Life Insurance Company Building, and the Dun and Bradstreet Building in New York, and the Gateway Buildings erected by City Investing Company and Equitable Life Assurance Society in Pittsburgh.

When the National Association of Building Owners and Managers learns of plans being drawn for a new office building somewhere in the country, the organization gets in touch with the company planning to construct the building and informs it of the service available through the Building Planning Service Council. Assuming that the owner is interested in the services of the council's experts, a review committee is formed by the Council.

This committee is individually created in each case for the particular building being considered, and consists of five to eight members of the association chosen from those who have had particular experience with the type of building under consideration. An effort is always made to have one

of these members come from the city in which the building is to be constructed.

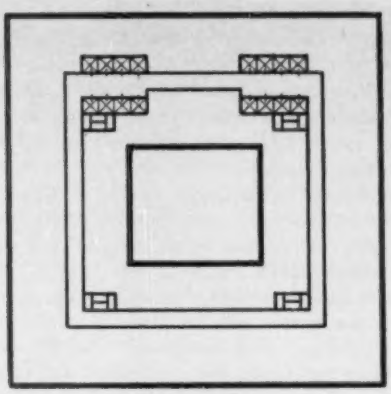
Each committee member is sent a set of plans for the building, a detailed, overall description of the area in which it is to be built, and an outline of what the owner expects tenancy and approximate rentals to be.

The various members of the committee review all this material in their own offices, and then converge on the city where the projected building is to be constructed. There, they work as a group in consultation with the building architects, the owner, and the contractors. Every phase of the plans for the new building is scrutinized and investigated on the basis of the suggestions the committee members have to offer. Possibly the architect has placed two banks of elevators back to back, as he did in one New York building. This would necessitate two elevator starters, whereas, if the two banks of elevators are placed facing each other, one starter could serve both groups.

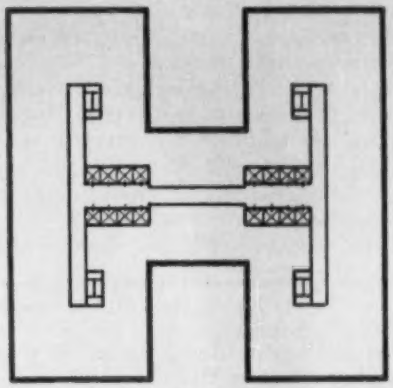
One major New York building was planned completely before being reviewed by the committee. After the committee had studied the plans, and had met as a group with the architects and the company planning the building, the core of the structure was entirely redesigned to make the building serve the specific purposes for which the owning company needed it better and more efficiently. One instance of changes made: The architects had planned a conventional elevator installation suitable for a general purpose office building with a multitude of individual tenants. But actually one company occupying several floors of a building will obviously create more interfloor traffic than would several unrelated tenants. The solution here was to replace some of the elevators planned with escalators between the departments having the greatest amount of interfloor traffic.

Fee for the services of the Building Planning Service Council amounts to expenses for the individual committee members who meet in the city where the new building is to be constructed plus a nominal fee to each member, and to the Association. (*To page* 78)

New York's Chrysler Building (top right) is one of many important buildings planned with the Council's help



PLAN A



PLAN B

The Building Planning Service Council will advise on the building design which will prove most profitable for a given location. Building A, built 20 stories high on a 150 foot square lot, would have total rentable area of 342,800 square feet and would cost, for building and land, $7,536,000. If building income is to give a six per cent return on investment, average rental income per square foot must be $3.93. However, Building B, if built to a height of 30 stories, would give a total of 390,720 square feet of rentable space, and would cost, for building and land, $7,726,000. Income per square foot to yield a six per cent return on the investment need only be $3.50. Moreover, Building B, because the plan is "H"-shaped, gives much more space overlooking the street, which is more desirable to tenants than interior court space. Thus Building B, which can remain profitable with a smaller return per square foot than Building A, will actually be able to command a higher average rental than Building A.

Part 1:

Automation: No easy answer

by Edward Waygren
Vice president, McDonald Bros., Inc., Management Engineers
New York

FOR SEVERAL years now we have been bombarded with articles and speeches presenting us with the prospect of living in a world of robots. "Automation," "automaticity," "giant brain," "feedback," "closed loop," and many other terms have become a part of our vocabulary, but there is reasonable doubt that we know what we're talking about when we use these words, primarily because there is apt to be some question as to exactly what they mean. There is considerably more than reasonable doubt that we are completely sound when we begin speculating on exactly what effect automation will have on our lives, or, of more specific interest, how we can use it in our jobs.

It would seem that the automated office is around the corner—nay, actually here—if complete credence is to be given all we hear. Based on recent publicity, virtually every office is making some use of electronic computers, and those that aren't will soon be relegated to the era of the roll-top desk—B.C.B. (before coffee breaks).

The fact is that there are still relatively few electronic computers in actual use on office operations. Not many companies have studied the merits of using them, and of these few have installed any. Much of what we have read has sounded good; so promising, in fact, that it has seemed like a panacea for the varied office problems we now have. However, I have yet to see an article, or hear a speech, where the economics of electronic computers applied to office operations has been clearly spelled out.

Initial cost of the equipment is only one factor. Also to be considered are these costs: installation, power, maintenance, modification of existing paperwork routines, programming, etc. It is not enough to say, "We are using an electronic computer and an operation that took us 150 hours is now being performed in 15."

As nearly as can be judged, the initial cost of one of the better-known computers will range from $750,000 to $1,000,000. It is fair to say that $750,000 represents a minimum figure. The rule-of-thumb this company uses in estimating economies is this: if you have a clerical pay roll of at least $250,000 annually, if the clerical work is being performed in a single location, and if there is enough repetitive volume, then an installation like this can probably pay for itself in about five years.

Fair enough, but is this an economically sound expenditure, when we consider that (a) the routines in that five-year period may have to be modified drastically, because of changed circumstances, thereby increasing total cost, which in turn will push the break-even point further into the future, and (b) comparable economies might be affected with lower capital expenditures? Let's calculate a hypothetical case.

A company has a clerical pay roll of $250,000 a year, which means, depending on location and salary rates, a force of from 80 to 100 people. Therefore, if the initial cost of the computer is $750,000, and if cost will be recovered in five years, the computer will have to effect annual savings of $150,000. For the five-year period, that represents no saving at all, unless there are non-economic or intangible benefits. Let's assume, however, that conditions remain unchanged for ten years and that the equipment lasts for ten years without undue maintenance difficulties (which is quite an assumption). The savings for the second five-year period will be clear, a total of $750,000.

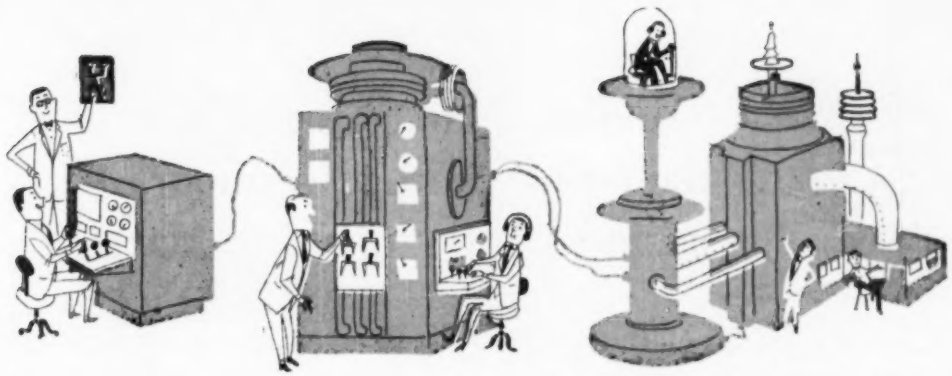
The pay roll for the ten-year period would have been $2,500,000, so the saving of $750,000 represents a 30 per cent reduction in cost based on a 60 per cent reduction in force. It must be realized that to the extent equipment operating costs are a factor, and they must be, the clerical force will have to be reduced more than 60 per cent to make up the difference.

Let's look at it from another point of view. If we attempt to bring about economies through a program of work simplification, elimination of duplication and unnecessary work, improved work place layout and environment in general and increased worker motivation, possibly through incentives, we won't have to make as flashy a showing because we haven't that equipment "nut" to meet. How much of a reduction in force would we need to match the savings through use of computers?

In the following table—

a = the year of life of the computer,
b = total cumulative pay roll without computer,
c = total comulative pay roll with computer plus computer amortization at 20 per cent annually,
d = net cumulative saving due to computer,
and e = per cent decrease in total cost (d divided by b).

This article is not intended for engineers but for business executives. The electronics engineer will find fault with some of the terminology and, more particularly, with the oversimplification of which I have been guilty. There is a reason—I want to make several specific points without driving the reader to a dictionary. One of the difficulties faced by manufacturers and engineers of computers is that those who might use them don't talk their language. If they did, a great deal of my criticism would be unnecessary.
—Edward Waygren



a	b	c	d	e
1	$ 250,000	$ 250,000	—	—
2	500,000	500,000	—	—
3	750,000	750,000	—	—
4	1,000,000	1,000,000	—	—
5	1,250,000	1,250,000	—	—
6	1,500,000	1,350,000	$150,000	10.0
7	1,750,000	1,450,000	300,000	17.1
8	2,000,000	1,550,000	450,000	22.5
9	2,250,000	1,650,000	600,000	26.7
10	2,500,000	1,750,000	750,000	30.0

Now, the question is, is it sounder to go about getting operating economies the "old-fashioned" way, through applying industrial engineering and common sense, or shall we do it by gambling $750,000 on a five-year pay-out? In the above analysis, I honestly believe I have given the computer the best of it, because:

1. Assumed initial cost is $750,000, which is a minimum figure; equipment alone is apt to cost more than that.

2. No installation or make-ready costs have been included, such as physical preparation, programming, revision of procedures, etc.

3. It has been assumed that net annual savings will be $150,000, or 60 per cent; actually, it will be necessary to substitute some high-priced technicians, mathematicians and specialists for relatively low-priced clerical employees.

4. It has been assumed that once the installation is complete there will be no major changes in programming, etc.

To the extent these assumptions are unsound, the net economies possible with the computer will be lower.

At this stage I can hear questions raised as to the "low-priced" computers we have been hearing about, those in the $50,000 to $100,000 range. I have never seen a cost analysis to show that their *relative* position is any more favorable than the one outlined above.

In order to view automation in the office in the proper perspective, it is necessary to re-examine the fundamentals involved. To begin, the original computers, as we know them, were developed and built to solve certain types of problems, and these tasks they did well. For example, if we were to ask, "The number 1828 has how many different pairs of factors, using numbers with two decimal places?" —the computer can do an infinitely faster and more accurate job than the mathematician.

This terrific speed was used not only to solve this kind of problem, and give the answer on a set of dials, but also additional stages made possible, through servo-mechanisms, the split-second solutions of problems in higher mathematics and the effecting of certain actions. Naval gun directors, the armament on a B-29, and other fire-control devices of similar types were made possible by computers many years ago.

Somewhere along the line some one must have reasoned: "The computer deals with numbers; numbers are involved in most office procedures; therefore there is a good application for a computer in office procedures." And that is probably how we came to have computers in offices.

The fact is that the office computer was not designed for the job it is supposed to do. It is a modification or an adaptation of a mechanism intended for a completely different kind of task. Therefore it is a compromise and fundamentally as unsatisfactory and as expensive as most compromises are in the long run.

The computer, for our present purposes, consists of three major functional components: the input, the calculator and the output. In solving a mathematical or scientific problem, speed is not needed in input; the problem is simply stated and the bulk of the work is done by the calculator. Output is not usually a problem either; the answer is given, often in terms of a formula, sometimes as a series of numbers. But the office problem is the reverse: the input may be a never-ending stream of orders that have to be extended, subtracted from inventory, allocated to sales territories, placed on the production schedule, etc. The calculator works so rapidly that the real problem is feeding the questions and, once the problem has been solved, taking the answers away.

In other words, the typical computer is strong on calculation and weak on input and output handling; while the typical clerical procedure demands agility and rapidity of input and output but comparatively little speed of the calculator. This means that, for the computer to be really effective, high speed devices must be hooked onto the input and the output. As far as I know, virtually every large computer used in office work operates in conjunction with punched-card equipment; therefore, regardless of the speed of the computer, the speed of the punched-card devices serves as an effective bottleneck.

The computer is also considerably more complicated than it need be for office operations and there's not much that can be done about it unless computers are scrapped and design begins from scratch again, this time with office operations in mind. Take the problem of accuracy, or dependability. Perhaps the best way to make my point would be to visit Arnold & Herman, the intrepid computer commandos. They have been toiling in their workshop developing a new electronic computer. Many months have gone by and finally they are ready to test their brain child.

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"Modern Management Horizons" theme of Chicago seminar, business show opening March 8

"BREAKING DOWN Organization Barriers" will be discussed by George Clements, president, Jewel Tea Company, in the keynote speech opening the 12th Annual Seminar and Business Show of the Office Management Association of Chicago, to be held in that city March 8-11.

Overall theme of the conference is "Modern Management Horizons." Both seminar and business show will be held in the Conrad Hilton Hotel. The Seminar, which will be held in conjunction with Northwestern University, will open with a luncheon on Monday, the 8th.

The afternoon session of the conference on Monday will open with a panel discussion on the subject, "How an Office Manager Becomes an Executive." Frank Hurt, W. A. Alexander Co., Chicago, Ill.; Marlen Loehrke, of Foote, Cone, and Belding, Chicago; and G. M. Powell, Employees Mutual Liability Insurance Co., will discuss the subject, and D. F. Carrell, vice president of the National Office Management Association, will serve as chairman.

Following the panel discussion, M. Wright, of the General Electric Company, New York, will discuss "A Company-Sponsored Self-Improvement Program."

Miss Dorothy V. Neruda, "Miss Business Show of 1954."

On Tuesday, March 9th, the morning session will be devoted to two talks: "Better Administration through Better Methods," presented by Robert Nagro, of Ball Brothers, Muncie, Ind., and "Plan for Simplified Paperwork," given by Kenneth E. Goodwin, Egry Register Co., Toledo, Ohio.

The afternoon session Tuesday will open with "The Future of Electronics in the Office," discussed by Harold Price, of Price Waterhouse & Co., Chicago. Second speaker at the afternoon session will be Dr. Lloyd A. Knowler, professor of mathematics at the State University of Iowa, who will discuss "Quality Control Applied to Clerical Work."

Topics covered at the morning session on Wednesday, March 10, will be "When People Like to Work" and "A Merit Rating Plan for Executives." Miss Louise M. Newman, Northwestern Mutual Life Insurance Company, Milwaukee, Wis., will discuss the first topic, Mr. William Hodge, Bell and Howell, Lincolnwood, Ill., the second.

At the afternoon session on Wednesday, the final day of the conference, the first speaker will be Dr. E. H. Porter, of Science Research, Inc., Chicago, who will discuss "Effective Use of Attitude Surveys," and the second speaker will be Mr. James D. Moore, J. D. Moore Organization, Chicago, who will speak on the subject "What Makes Us Seem So Queer?"

The banquet on Wednesday evening will conclude the conference portion of the Seminar and Business Show, although the show, as usual, will remain open for an additional day. Chairman for the Seminar Banquet is Mr. Ken Moore, president of the National Office Management Association, and the speaker will be Mr. Robert Hurleigh, Mutual Broadcasting System news commentator. His subject will be "So Goes the World Today."

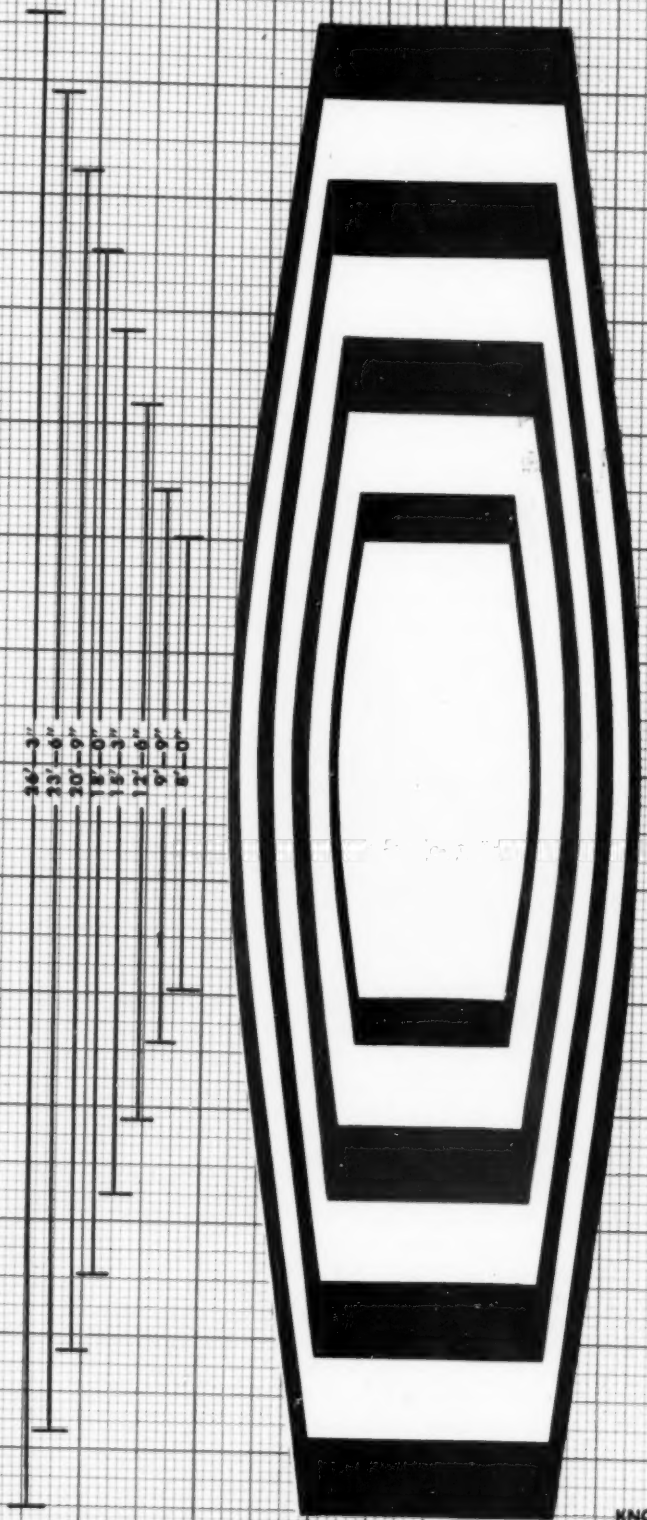
The business show which will be held concurrently with the conference, and for one additional day beyond the close of the conference, is expected to attract over 40,000 visitors. More than 100 office equipment companies and service organizations will have exhibits at the show.

Exhibitors include:

Accounting Forms, Inc.; Acme Visible Record, Inc.; Addressograph-Multigraph Corp.; Allen Wales Adding Machine Agency; All-Steel Equipment Inc.; American Automatic Typewriter Co.; American Perforator Co.; American Photo Copy Equipment Co.; Art Metal Construction Co.; Bankers Box Co.; Bircher Co.; E. W. Boehm Co.; Charles Bruning Co., Inc.; Burroughs Corp.; Business Efficiency Aids; Chart-Pak Inc., and Chicago Dictating Machine Co.

The Cincinnati Time Recorder Co.; Clary Multiplier Corp.; Commercial Controls Corp.; E. Conway, Inc.; R.

(*To page* 81)



Conference tables in a practical boat-shape of handsome visual simplicity. Designed to meet the requirements of group discussion in contemporary offices. A versatile collection, offering a choice of birch, walnut, cherry, teak, and other woods, with table and chair bases in metal or wood. Write for Knoll Office Planned Furniture catalog.

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CASE OF THE MONTH

Sixth of a series describing how concerns have improved office methods and procedures

6 Carborundum finds microfilming current accounts ends record storage problems

THE CONSTANT accumulation of space-consuming records is a continuing problem in almost every office, and has led many organizations to the use of microfilm for transfer of original records after a stated period of time. But some companies have made microfilm an integral part of their record system at the initial stages of paper work. The Carborundum Company, for example, has provided the final touch toward rounding out a smooth, rapid, and remarkable accounts receivable system with microfilm.

Key to the overall system is a centralization of work in the head offices at Niagara Falls. As part of the Treasurer and Controller's Division, the accounts receivable and microfilm departments prepare and retain all receivable records for Carborundum's divisions and subsidiaries in the U. S. and Canada. Annual sales volume for the Company is from 75 to 85 million dollars.

Leading roles in developing the system and responsibilities for maintaining and improving its efficiency are filled by Willis T. Windle, Treasurer and Controller; Robert E. Sawyer, manager of the accounting department; Edwin A. Kappenmann, division accountant; Conrad J. Kink, head of the accounts receivable and accounts payable department; and Brewster F. Brown, head of the microfilming department.

To handle the receivables work, Carborundum has seven billing machines which can compute and prepare a complete invoice as rapidly as it normally takes just to type it. Four posting machines handle statements and ledgers, one accounting machine is used for cash sheet distribution, and microfilming equipment is applied to records retention.

"When microfilm was installed in 1950," Mr. Windle says, "its original purpose was to relieve record storage problems. Since The Carborundum Company was established in 1892, millions of documents had accumulated in storage spaces at whatever point could be found. At times we felt as though the walls would bulge from records. To regain this valuable space and to provide a permanent record of documents we turned to microfilm.

"While the equipment was serving this purpose, we discovered that the microfilming of current accounts receivable records would prevent their accumulation into loads that threatened to become a storage problem."

Accordingly, the bookkeeper's copy of invoices, and all debit and credit memoranda are now microfilmed, with the original copies being retained from three to six months. They then are destroyed, and the microfilmed images become the company's official records for the legally required seven years. About 2,100 invoices are prepared each day. In 1951 some 698,000 invoices and in 1952 another 682,000 invoices were photographed.

Cash received slips also are microfilmed, with the original copies being destroyed after from three to six months and the microfilmed copies being retained for seven years. Original accounts receivable ledgers are kept for a year before being destroyed, and the microfilmed images are retained for the additionally required six years.

Around 1,000 remittance advices and 1,500 merchandising credit memos are received monthly which means that about 62,000 accounts receivable items are systematically microfilmed and disposed of each month.

All film is filed in one nine-drawer cabinet which houses 108 rolls of film per drawer. The millions of records, representing three years of activity, have filled slightly over half of the cabinet.

When not in use on receivables work, the microfilming equipment is used to photograph other company documents in compliance with Carborundum's records retention program.

As an additional example of Carborundum's efforts to increase efficiency, Mr. Windle describes a unique method developed for handling remittances.

When a customer's envelope containing a check in payment for an invoice is received in the Treasurer's office, the check is removed and the face of the envelope is rubber stamped. The amount of the remittance plus any additional information is then written into a space on the stamped area.

A listing of the checks produces a total which is used for the bank deposit. A listing of the amounts on the envelopes proves the envelopes' total against the deposit.

The envelopes and a duplicate copy of the tape are sent to the accounts receivable department where the total on the tape is recorded in the Cash Receipts Journal.

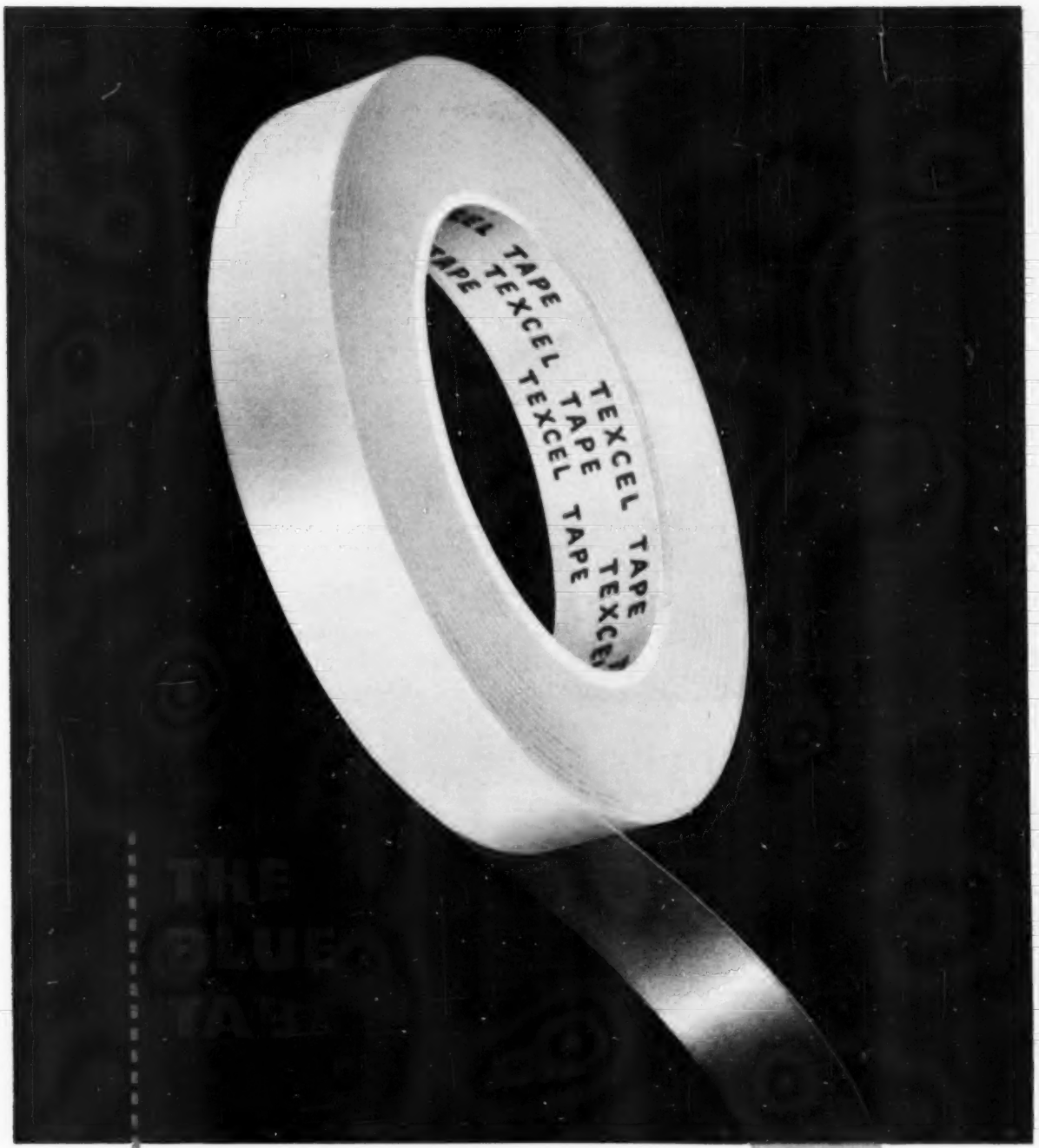
The envelopes are then sorted alphabetically by controls, passed to cash checkers for keying off against the customer's ledger, with the checker writing in the discount amount and the gross amount applied to the account.

The cash sheet showing distribution by controls is then run off and establishes a predetermined control figure which later is used to balance the postings to accounts receivables.

Using the envelopes as media, the accounting machine operators then post the customers' ledgers.

After all controls have been summarized, then balanced against the amount charged by the Treasurer's office, the envelopes are microfilmed.

This method allows the Treasurer to prepare bank deposits as rapidly as remittances arrive. It also minimizes work by eliminating the rehandling of remittances, permits financial reports to be prepared rapidly, and prevents the envelopes accumulating to become a storage problem.



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visualize this *Leopold* desk in your office for greater efficiency, comfort and beauty

Top photograph shows the Alice Bank & Trust Co., Alice, Texas, Leopold Installation by Stafford-Loudon Co., Forth Worth, Texas.

This modern functional Leopold conference desk serves as an executive desk *and* as a conference table. Notice how the file drawer is located in the top position for greater convenience.

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Walter Reilman

Plans announced for

NOMA's 35th International Conference

AN ALL-TIME HIGH of 1,800 registrants is expected at the National Office Management Association's 35th International Conference, to be held in St. Louis, Mo., May 23-26, according to John W. Dameron, chairman of the Program Committee.

Mr. Dameron, of the St. Louis Public Service, based this anticipated registration on St. Louis' central location, which will simplify travel for NOMA members from all parts of the country, and on present business conditions, which are making higher production at lower cost mandatory in many offices.

"The tightening economy forecast for the future," he said, "gives indication that office managers will be forced to operate in a climate which has been unknown to them for more than a decade."

The change in conditions, he continued, will mean more than "simply taking a hitch in the office belt."

"The office," he declared, "will have to 'rev up' to a new level of production efficiency—and do it on a smaller budget."

The NOMA conference program has been specifically planned with tightening business conditions in mind, he went on.

"Our purpose is to provide the office manager with the new attitude and new information he will need to live in this new economic climate," he said.

Three of the speakers who will talk at the conference, which will be held at the Jefferson Hotel and Kiel Auditorium in St. Louis, have already been announced: Jack C. Staehle, Director of Industrial Relations for Aldens, Inc., Chicago; Dr. Cylvia A. Sorkin, management consultant and employment counselor, of St. Louis and Chicago; and Walter Reilman, Manager of Management Services for Ernst & Ernst, St. Louis.

The business equipment exposition will be held in the Kiel Auditorium in conjunction with the conference. Featuring office machines, equipment, furniture, supplies, services and systems, the exposition will also remain open one day after the close of the conference—Thursday, May 27—to allow all conference delegates an entirely free day to visit the show.

The three-day conference program will include six major sessions, devoted to the following topics:

"Progress is Made by People"
"Teaching, Learning, Leading"
"Madness in Your Methods or Method in Your Madness?"
"Progress Through Better Communication"
"Machines—A Solution or a Problem?"
"Office Practices, Privileges and Problems"

Mr. Staehle will head the "Teaching, Learning, Leading" session; Dr. Sorkin will discuss "Progress is Made by People;" and "Method in Your Madness" will be Mr. Reilman's subject.

In addition to the conference technical sessions, the program will include NOMA's Annual Business Meeting, at which new national officers and directors will be elected; the Annual Banquet, major social event of the meeting; the Chapter President's Dinner, at which the retiring heads of NOMA's 145 chapters will be honored; the Chapter Officers' Council, where the coming year's program will be discussed and planned by incoming chapter leaders; and meetings of many of the association's national committees. Ceremonies will also be held for the presentation of many individual and chapter awards.

Conference registration forms may be obtained through NOMA headquarters, 132 West Chelten Ave., Philadelphia 44.

According to NOMA spokesmen, more than 100 manufacturers of office machines and equipment will have their products on display at the four-day exposition in Kiel Auditorium. Attendance at the Office Machinery and Equipment Exposition is expected to pass 100,000.

NOMA is receiving cooperation from the Office Equipment Manufacturers' Institute, the Wood Office Furniture Institute, and the Metal Business Equipment Industry, in conducting the show.

U. S. Steel—

(*From page 27*)

in the tape will cause the bookkeeping machine to stop on the stop code so that additional data may be filled in; to tabulate and type from one column to another; and to return the carriage to the next writing line and continue typing. In the meantime, the bookkeeping machine is producing another punched tape with essential data to be carried forward to a subsequent operation.

This may seem far afield to problems faced by other organizations. There is one application, however, that is common to all of us—the physical inventory.

Visualize, if you will, a hand-operated adding machine on a typewriter stand, freely moved from place to place. The adding machine is mechanically connected with a tape punch. The basic essentials of a physical inventory are the identification of the product and the count. One person might call off the data while another records them on the adding machine. The result is a printed record, the detail of which has been accumulated, and a punched tape as a by-product. The printed record might become an inventory tag. The punched tape may be used to automatically punch cards for accounting and statistical purposes.

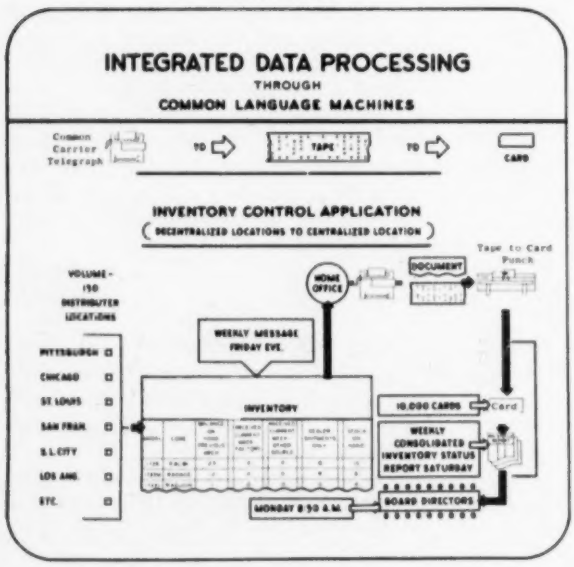
There are a number of other applications for the adding machines with the punched tape. The most common are receiving and shipping.

Assume that when a purchase order is processed, a copy is sent to the receiving department. This copy displays a code which identifies the product, the purchase order number, and other related data.

Now the material is received, and the receiving report must be prepared. It is inserted in the adding machine and the purchase order number and code identifying the material are recorded by the adding machine. Then, the weights or units of the material are listed and totaled to complete the receiving report. As a by-product of the operation we have a punched tape.

This tape may be used to prepare various reports and documents in succeeding operations. While these reports are automatically prepared, another punched tape is produced simultaneously. This tape will activate machines that will automatically provide inventory accounting, punched cards, and mechanical audits.

Exhibit 6



In Integrated Data Processing the typewriter is a very flexible means of originating data. Ordinarily it is operated manually from the keyboard, but when data is of repetitive nature, it can be operated automatically by a prepunched tape or card.

The flexibility of the machine is further expanded by programming, in which functions are performed automatically and selected data are processed through multiple punches and readers.

Punches and readers are connected with the type bars and functional keys by electrical relays. Operation of the keyboard causes codes to be punched into the tape in much the same manner as I described for the adding machine.

A few specific applications of this machine for originating data. Assume we are in a sales office reviewing processing of sales orders. Like most businesses, many of the orders received are repetitive—the same customer buys the same materials year in and year out. Quantity, size, and price are about the only variable factors.

Processing of repetitive data is a natural application for this typewriter as it brings automatic typing into play to a maximum degree. Predetermined data must be established to provide the automatic feature. This requires a comprehensive analysis of the customer's buying habits.

History records of each customer are reviewed to determine material ordered. Let's see what happened when the history records of ABC Corp. were reviewed. It was found that they constantly purchased one item in large quantities, so a pre-punched tape was prepared with name, address, standard instructions and description of the material. In addition, there were several codes relating to sales statistics.

The history record of Rover Corp., however, showed that they purchased any one of 15,000 items. In this instance, punched cards were prepared for only name, address, and sales statistics. To complete one order for this company, prepunched master cards are pulled from a tub file for the items ordered.

Assume an order was received from ABC Corp. in this sales office, and it calls for the item they have repeatedly ordered. A clerk pulls a prepunched tape from the file to start typing the order.

When the prepunched tape is fed into the reader, the read button is depressed to actuate the reader, which automatically operates the typewriter to insert standard information from history record.

Now, the rest of the order is automatically typed with stop codes interspersed to permit fill-in data such as: order number, date, etc. Before and after each item there are also stop codes to allow for the typing of quantity, size, and price.

While automatic typing is going on, a tape is simultaneously punched. This tape will be sent to the mill, and used to automatically type the invoice, and for sales statistics by converting tape to punched cards.

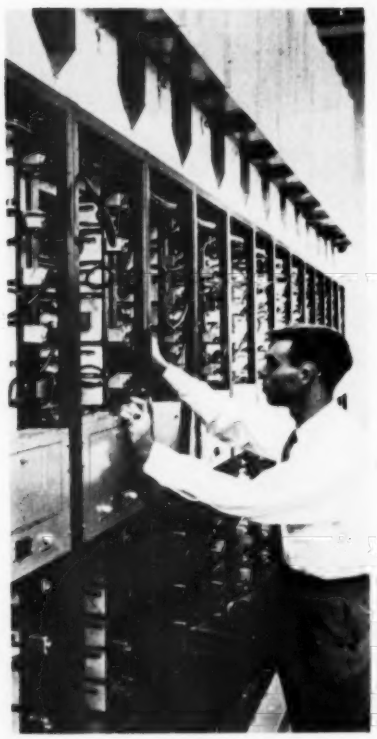
This description covers the processing of an order from ABC Corporation. The same procedures are followed for orders from customers like Rover Corporation except that punched cards are fed through the reader instead of tape.

(*To page 74*)

News pictorial

▶ The 700th member of the Office Executives Association of New York is presented with a specially inscribed membership certificate at a recent dinner meeting of the Association. The new member, shown at the right, is Bridgford Hunt, personnel manager of Pfizer International Service Co., Inc., and the presentation is being made by Paul Chave, OEA vice president in charge of membership. OEA is the New York chapter of the National Office Management Association.

▼ "Travel-Talk" does for the man who is bursting with a letter to be written what the telephone does for the man bursting with stifled conversation. A coin-operated Dictaphone "Time-Master 5," installed in a booth, provides dictation services for the traveler. Dictaphone Corp. is located at 420 Lexington Ave., New York 17.



▲ Cooperation between industry and educational institutions is symbolized by this recent installation of a new electronic computer at Wayne University, in Detroit. This newest "brain" is called "UDEC," for "Unitized Digital Electronic Computer." It was designed and built by the Burroughs Corp., Detroit 32, as part of a $500,000 community industrial education project paid for by a number of Detroit's leading industrial firms. Unlike other computers, UDEC is built primarily of "unit-packaged" electronic circuits, a method which makes it flexible and may prevent its ever becoming obsolete. A rear view appears at the left.

▶ A golden anniversary for a man and for a company is celebrated by the Royal Typewriter Co., Inc., 2 Park Ave., New York. Royal's President Fortune Peter Ryan (left) is shown presenting a silver tray to Julius Schillinger, the company's coordinator of quality control and design. Royal, observing its own fiftieth anniversary, honored Mr. Schillinger for his fifty years with the company.

The walls of the office on the left are finished in "Marlite" wall paneling. Marlite is a product of Marsh Wall Products, Inc., Dover, Ohio. It has a baked finish that the manufacturer says is soilproof. Marlite is now available in planks 16 inches wide and 8 feet long, and in blocks 16 inches square. It is three-sixteenths of an inch thick. A feature of Marlite is what the company calls "the first successful tongue and groove joint" for material of this thickness. Marlite panels can be put up over old or new walls. Only ordinary carpenter's tools and mastic cement are required. No division mouldings are needed. Ten colors and four wood pattern finishes are available. Shown below are the stairway and corridor in the Keiffer Tanning Co., Grand Rapids, Mich., before and after an installation of Marlite panels.

The ceiling of this office is a source of heat. It was manufactured by the Burgess-Manning Co., 5970 Northwest Highway, Chicago 31, Ill., in accordance with the principles of radiant heating. In this type of ceiling, hot water circulates in pipes above the ceiling panels. The ceiling itself consists of prefabricated, perforated metal panels, clipped onto a coil system. The heat in the coils is transmitted to the panels and in turn distributed evenly throughout the room. The panels are easy to install, says the manufacturer, and easy to remove for inspection. Water temperature can be easily controlled and can, in summer, be used for cooling. The installation shown is in a private office of the James I. Barnes Construction Co., Redwood City, Cal. The architect was Irving Caster, of San Mateo.

▲ Among the products newly marketed by The Esterbrook Pen Co., Delaware Ave. and Cooper St., Camden 1, N. J., is this No. 212 "Ball Point Desk Pen Set." The base is heavy, made of "Nu-Black" porcelain with a lustrous finish. The set is available with the pen chained to the base or with the pen completely free. Also new is the No. 444 "Dipless" pen that fills itself.

▼ Colorful memos, reports, announcements, and letters can be prepared in the office with the help of standard duplicating equipment, says Arthur Thompson & Co., 109 Market Pl., Baltimore 2. This company has prepared a "Letterhead Portfolio" containing samples of the various colored lithographed stationery sheets available in the company's wide line of duplicator papers, in general and seasonal designs. A book of "Quickie Layouts" provides help on how to lay out an attractive job. Numerous designs, headings, and lettering samples are offered on a series of sheets which can be traced on a stencil, pasted up for offset reproduction or reproduced for letterpress work. The kit is intended to assist office people in planning and preparing colorful mailings and memos. The materials are already prepared and ready for combination according to the imagination of the user.

▲ This No. CF8078 conference desk is one of the new "Baltic" series made by the Jasper Office Furniture Co., Jasper, Ind. The overhang top measures 78 by 42 inches. The desk is made of walnut, with brushed brass hardware.

▶ The "Dupli-Voice" portable dictating and transcribing machine records on a magnetic "Erase-o-matic" belt designed to give high fidelity and to permit easy correction of dictating errors. It is made by the Dupli-Voice Co., Inc., Algonquin, Ill.

New for the office

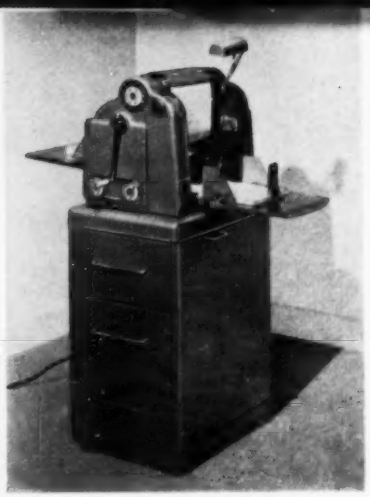
▶ The Corry-Jamestown Mfg. Corp., Corry, Pa., announces a new line of economy files called the "Corrian." The drawers have roller and case-hardened bearings and side acting compressors. Two- and four-drawer legal- and letter-size cabinets are offered.

A Monthly Feature

Tools of the Office

Duplicating Equipment

Manufacturers' List on Page 70

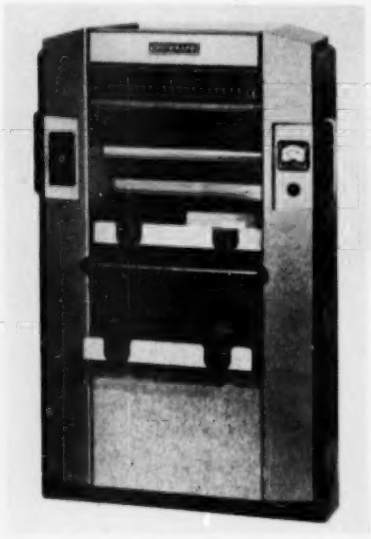


Gestetner model 260

The survey of duplicating methods and equipment conducted last year by this magazine proved very popular with readers.

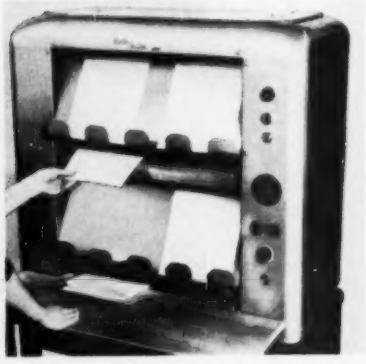
This year the subject has been restudied and the material has been expanded to bring the coverage of this subject completely up to date.

The duplicating equipment listed in this survey is grouped according to its basic principle of operation. The principle concerned is described in the introduction to each group, and the basic characteristics and uses of each method are summarized in the new, expanded chart on page 46.

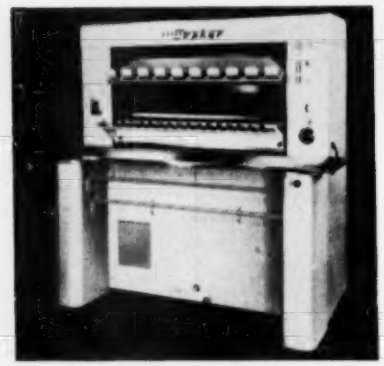


Bruning "Copyflex" 14

Ozalid "Bambino"



Peck & Harvey "Portomaster"



Pease "Zephyr"

Winchester's No. C-360

Stenafax's No. S-5

Diazo

The Process

The diazo process may be considered as an improved form of blueprinting which has been adapted for office uses. It normally produces black and white copies, although other color combinations are possible. Unlike blueprinting, it makes positive copies and it is therefore well suited to copying correspondence.

The diazo process is often referred to as "whiteprinting" or Ozalid." The latter, a trade mark of the General Aniline & Film Corp., is derived by spelling "diazo" backwards and inserting "l" to make it pronounceable.

The process operates on the principle that certain dyes respond to strong light by bleaching or being destroyed, whereas they may be prevented from bleaching by exposure to ammonia vapors. Copies are made on sensitized paper which has a coating containing an appropriate dye.

The material to be copied is placed face up, with its back against the

coated side of the copy paper. Upon insertion in the copying machine, the material is subjected to a strong light, which shines through the original to the copy paper.

This light, however, cannot penetrate the written characters on the original material. The sensitized coating beneath these dark characters, therefore, is protected from the bleaching effects of the light, whereas the coating beneath the white areas is destroyed. Dye remains on the copy paper, therefore, only in areas that correspond exactly to the written material of the original.

The copy paper is then subjected to a chemical which sets the dye permanently. In most commercial machines ammonia vapors are used for this purpose, and makers of this equipment generally refer to this method as a "dry" process. A similar effect, however, can be obtained by covering the copy paper with a light coat of a special solution. This is sometimes referred to as a "wet" process.

Material to be reproduced by the diazo process must be written on one side only of translucent paper or some other translucent medium. Where opaque material is to be copied, a translucent positive must first be prepared, usually on film. Masters may also be prepared, however, by xerography.

The final prints can be made on opaque or transparent material, printing in red, blue, or black on papers of various colors.

The diazo process is considered to be particularly suitable for making exact copies of letters, photographs, drawings, printed matter, and other types of written material where relatively few copies are desired. One manufacturer estimates that his machine will make 200-letter-size copies an hour; others measure the copying rate in feet per minute, the figures ranging from about 25 to 32 feet. All rates vary with the translucency of the original material. The estimated copying costs range from one to two cents per copy.

Next Month:

Fans and Air Circulators
Air Conditioning Equipment
Water Coolers

The Equipment

Charles Bruning Co. Inc.

Illustration. Opposite page.
Model No. "Copyflex" 14.
Maximum Copy Size. Width, 20 in.; length, unlimited.
Power. 115-volt AC.
Process. Bruning models use the "wet" process and require no venting.
Dimensions. 57 in. high, 36½ in. wide, 35 in. deep.
Price. $1,475 list, f.o.b. Chicago.
Other Models. Other models vary in size. A feature of the No. 6 is that it can copy pages from a book without requiring pages to be removed.

Ozalid, Div. of General Aniline & Film Corp.

Illustration. Opposite page.
Model. "Bambino."
Maximum Copy Size. Width, 9 in.; other models can take up to 54 in. Length, unlimited.
Power. 110-115-volt, 60 cycle AC.
Process. Dry. This model, however, being small, does not require outside venting.
Dimensions. 16 in. wide, 12 in. deep, 13 in. high.
Price. Approximately $410 list.
Other Models. Ozalid also makes a larger table model, called the "Ozomatic," and larger machines called the "Streamliner" and "Printmaster," these having considerably greater printing capacity.

The C. F. Pease Co.

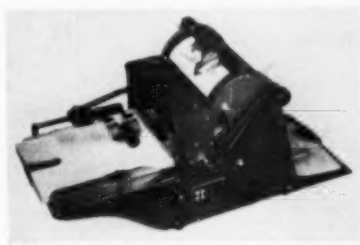
Illustration. Opposite page.
Model. "Zephyr."
Maximum Copy Size. Width, 42 in.; length, unlimited.
Power. 220-volt, 60 cycle, single phase AC.
Process. Dry. Vent piping furnished with machine.
Features. Automatic ammonia feed; "electronic" drive and speed control; automatic stacking of prints; copying speed, 25 ft. a min.
Dimensions. Height, 70⅝ in.; depth, including feed table, 40¼ in.; width, including feed table, 73⅛ in.
Price. $2,500, f.o.b. Chicago.
Other Models. The "Pacemaker" is available in two sizes, accommodating copy widths of 42 and 54 in. It takes copy at 32 ft. a min.

Peck & Harvey

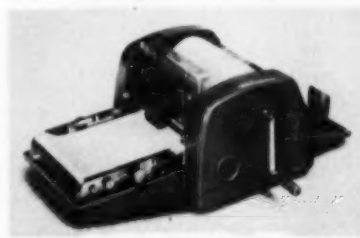
Illustration. Opposite page.
Model No. "Portomaster" No. 1400.
Maximum Copy Size. Width, 20 in.;

Columbia gelatin duplicator

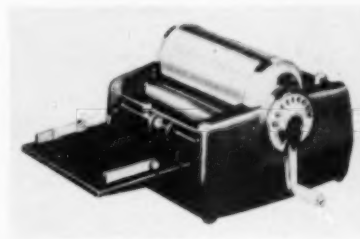
Heyer gelatin duplicator



Copy-Plus "Curvette"



A. B. Dick's No. 220



Duplicopy's No. A-44

Speedliner's No. 74

OFFICE DUPLICATION METHODS—HOW THEY COMPARE

Method	Number of Copies for which Best Suited*	Speed**	Estimated Cost per Copy**	Remarks
Diazo	1-20	1-30 feet per minute	¾-1½ cents	Original copy must be on translucent paper, on only one side. Cannot enlarge or reduce. Can copy photographs and art work. Produces positives. Color of printing can be varied from copy to copy, as can color of paper.
Facsimile	1-10, but can prepare offset masters and stencils	Single copies, 3 minutes; stencils and offset masters, 6 minutes	Single copies, 7½ cents; copies made with stencil, in runs of 20, 1½ cents	Copies original material, including photographs and art work. Cannot enlarge or reduce. Produces positives, black on white. Can prepare stencils and offset masters. Can be used for long distance transmission.
Gelatin *(also called Hectograph)*	10-100	10-75 copies a minute, depending on type of machine	Least expensive of all processes for short runs	Master must be prepared. Copies grow progressively fainter. Can print 8 colors at once; purple is best. Produces positives. Gelatin can be re-used.
Liquid *(also called Spirit, or Fluid)*	10-350	60-120 copies a minute	¼ to ⅓ cent	Master must be prepared. Copies grow progressively fainter. Several colors can be printed at once; purple is best. Produces positives.
Multigraph *(also called Relief)*	300-hundreds of thousands	3,000-6,000 copies an hour	Slightly more than stencil duplicators on long runs	Closely resembles typing; can be used for actual printing. Produces positives, one color at a time. Prints from movable type, electrotypes, or plates, permitting changes in material during run.
Offset *(also called Multilith)*	50-10,000	2,500-5,000 copies an hour	A fraction of a cent varying with run	Master must be prepared. Can reproduce photographs, letterheads, and art work. Can enlarge or reduce if master is prepared photographically. Produces positives, one color at a time.
Photocopy	1-20	1-2 copies a minute	8-9 cents	Copies original material, including photographs and art work. Most models make exact-size copies; some can enlarge and reduce. Produces negatives first, then positives, usually black on white—color available in some cases.
Stencil *(also called Mimeograph)*	50-5,000	60-200 copies a minute	⅛ cent on long runs	Stencil must be prepared. Cannot enlarge or reduce. Produces positives, usually one color at a time, but in some cases it is possible to print several colors at once.
Thermo-Fax	1-20	4 copies a minute	4-5½ cents	Copies original material, including drawings. Cannot enlarge or reduce. Produces positives, black on white.
Verifax	1-3	3 copies a minute; single copies, 50 seconds	Single copies, 9½ cents; in runs of 3, 4 cents	Copies original material, including photographs and art work. Cannot enlarge or reduce. Makes copies on standard office paper. Produces positives, black on white.
Xerography	1-10	Single copies, 2-3 minutes; offset masters, 3-5 minutes	Single copies, 9 cents; with offset, a fraction of a cent on long runs	Copies original material, including photographs and art work. Can enlarge and reduce. Can make single copies, offset masters, translucent diazo masters. Produces positives, black on white.

*Based on cost, speed, and other factors. Shorter or longer runs may be feasible in varying circumstances.

**Based largely on manufacturers' estimates, with reference to standard machines turning out letter-size copies.

Figures are approximate and can vary with circumstances.

length, unlimited.

Power. 110-volt, 60 cycle AC.

Features. "Electronic" drive without vacuum tubes; instantaneous speed changes, with full stop and reverse control.

Dimensions. Width, 36 in.; height, 33 in.; depth, 20 in., plus 12 in. feedboard. This model is also available as a floor model 62¼ in. high.

Price. $1,195. Of the floor model, $1,295.

Delivery. Starting in April.

Other Models. The Portomaster 600, in floor and table models, is slightly smaller, as is also the Portoprinter 600. Larger models are the Speedmaster 1400 and Speedmaster model S.

Facsimile

The Process

The facsimile process represents an adaptation to office uses of the prin-

HERE'S the Machine That is Revolutionizing ADDRESSING and RECORD DUPLICATING Procedures

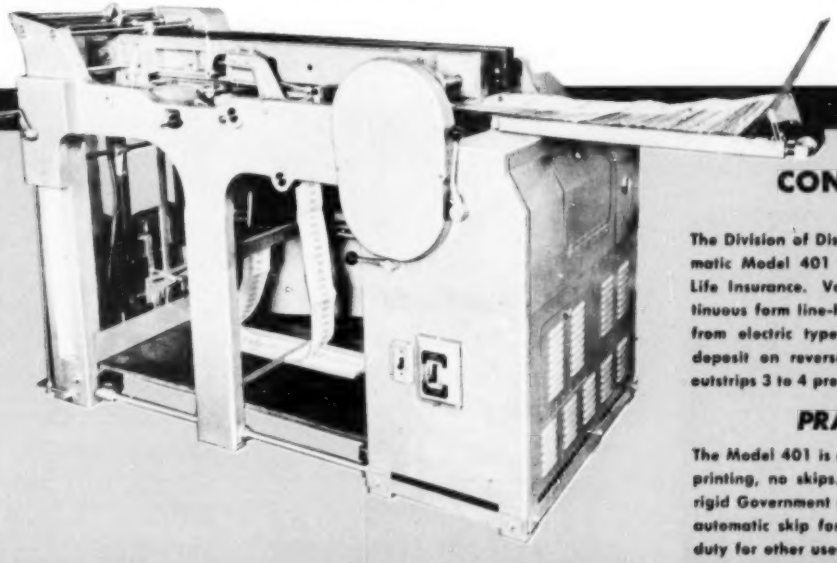
Be sure you have Up-to-Date knowledge of the *SCRIPTOMATIC* SYSTEM

***BIG* Dollar Savings for a Variety of BUSINESS USES**

Several models of Scriptomatic Addressing and Record Duplicating Machines are described here. They have introduced a revolutionary new system for labor saving, versatile, low-cost addressing and record duplicating work.

Scriptomatic makes possible the use of a tab card, or continuous form as an address plate. It thus creates a previously unheard-of flexibility and economy that basically affects costs in two ways. First, is the efficiency of modern punch card accounting as applied to address records. Second, is the low cost master which is produced without expensive embossing machines. Your electric typewriter will do the job at speeds up to two hundred and fifty, three-line name and addresses per hour.

The Scriptomatic system is based on a well-proved chemical transfer process that utilizes an original card or paper form as the master from which duplicate information is produced. This eliminates the cost of separate stencils, files, duplicate maintenance, and greatly reduces clerical load. Thousands of dollars are saved wherever Scriptomatic is adopted for large mailing list or complex record duplicating operations. Departments of the U. S. Government, the armed services, mail order houses, publishers, large corporations and service companies have tried Scriptomatic machines and ORDERED MORE.



CONSECUTIVE IMPRINTER

(400 Series)

The Division of Dispersements, U. S. Treasury Department uses Scriptomatic Model 401 to process millions of checks for National Service Life Insurance. Vouchers are typed as Scriptomatic masters on continuous form line-hole punched, continuous feeding, fan folds directly from electric typewriters. Checks are imprinted from black carbon deposit on reverse side of typed voucher at a rate of speed that outstrips 3 to 4 previous machines.

PRACTICALLY FOOLPROOF

The Model 401 is a miracle of accuracy and dependability. No double printing, no skips. Reproduction is a sharp clear black, meeting the rigid Government specifications required on this type of document. Has automatic skip for errors or unwanted items. Masters serve multiple duty for other uses.

DIRECT MAIL

Extremely low cost master listings are easily and quickly typed or hand written. A variety of mailing pieces may be automatically addressed at high speeds. This makes the Scriptomatic Continuous Imprinter invaluable for missionary, recruiting, inquiry and premium type mailing activities. Master listings may be used to address many mailings. Substantial economies may be effected even where the number of mailings are limited to one or two efforts.

OTHER SUGGESTED USES:

BILLING—Tab card, post card and paper bills may be created at high speeds directly from typed or tabulated journals.

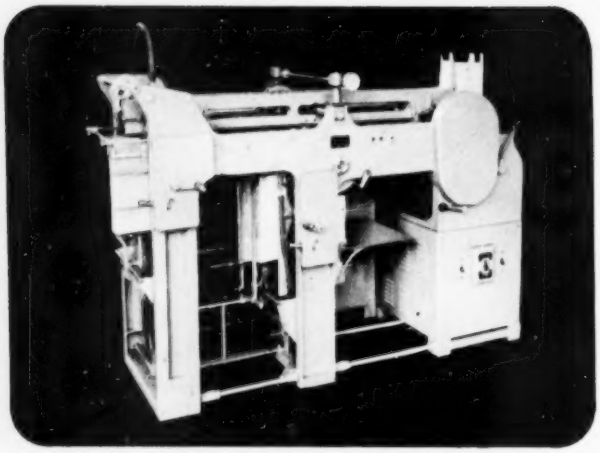
ITEM ABSTRACTS—Individual cards or item records may be abstracted from orders and other similar listed forms.

SEE REVERSE SIDE FOR OTHER SCRIPTOMATIC MODELS

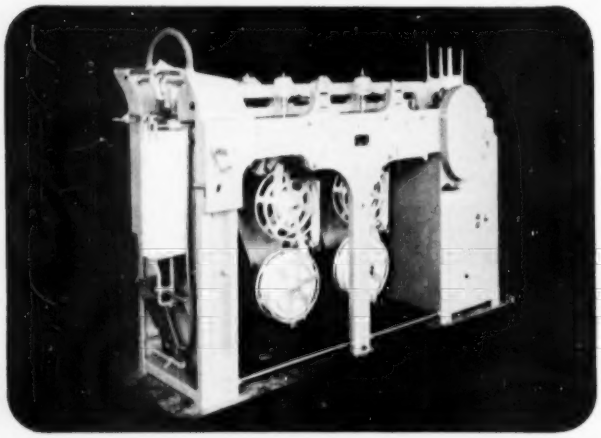
Scriptomatic SYSTEM SAVES UP TO $52 PER THOUSAND MASTERS

USING STANDARD OFFICE EQUIPMENT— STANDARD BUSINESS RECORD CARDS

As many as 250 reproductions can be made from each Scriptomatic master card. No special stencil cutting, no separate filing and list maintenance required. You save clerical labor, space and stencil costs.



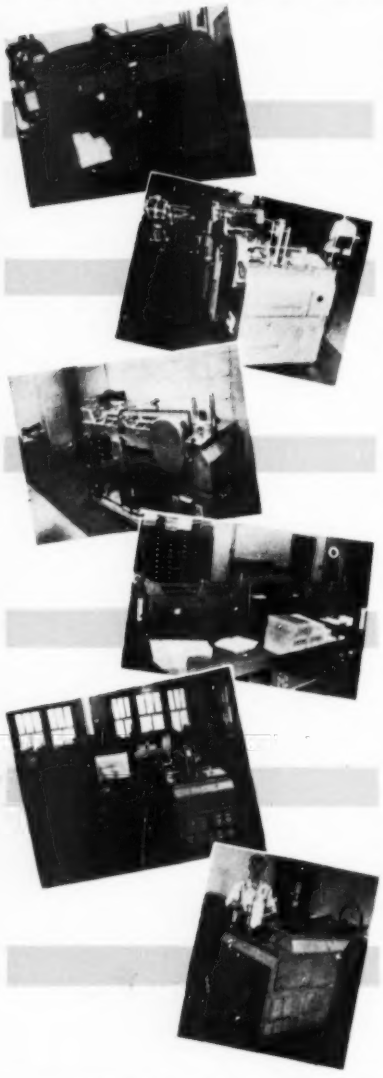
SCRIPTOMATIC (200 Series) Reproduces from card masters on a variety of materials—envelopes, labels, bills, statements, etc. Tabulating machine cards and group sort cards may be used as Scriptomatic masters. Accounts Receivable and other valuable information may be maintained on Scriptomatic Master cards. Master lists may be pre-sorted at high speeds on mechanical sorters allowing flexibility of list selection.



SCRIPTOMATIC (300 Series) Addresses from master cards or other business forms—prints 2 rolls in sequence in one run through machine. One roll can be a dick strip and the other roll a galley list for auditing. Or, both can be dick strips for addressing every other week, etc.

TYPICAL SUCCESSFUL SCRIPTOMATIC INSTALLATIONS

THESE FIRMS TRIED ONE—BOUGHT MORE!



U. S. NAVY

Scriptomatic proved in one district, leading to ten additional installations, three on West Coast, five on East Coast, one in Mid West, one in South. Used for addressing communications to Naval Reserve personnel. Punch cards used for masters permit complete selectivity by name, grade, etc.

PUBLISHER

Scriptomatic combines two separate records for each salesman on one address master. Eliminates expense and storage problem of thousands of zinc address plates. Handles twice as fast as previous addressing system.

MAIL ORDER

Scriptomatic addresses 15 million mailings a year. Saves the work of 10 people. Masters are also used as customer record cards.

FINANCE COMPANY

Scriptomatic system eliminates expense and trouble of employing 75 to 80 outside part-time typists. Index card size master is used to register in window envelopes, on letters and booklets.

REPORTING SERVICE

Using continuous form master card (pin fed) and electric typewriters, 25,000 masters are created daily. Scriptomatic system produces millions of 3 x 5 cards annually for commercial reporting service. Scriptomatic eliminated 3 embossing machines. Saved over $28 per thousand masters and $11,000 annual labor costs—despite an increase in business volume of 31%.

Installations shown here represent a total of twenty-two machines in use.

YOU, TOO, CAN PROFIT BY SCRIPTOMATIC

Scriptomatic

SCRIPTOMATIC, INC., 300-316 N. 11th STREET, PHILADELPHIA 7, PA.

ciples of the photoelectric cell.

Material to be copied is placed on a drum. The drum rotates slowly and as it does so each line is scanned by a photoelectric "eye." The eye responds to light reflected from the paper, creating an electrical current which varies in strength with the amount of light entering the eye.

The electrical impulses thus generated are used to control electrical current in a needle. This needle moves across a second drum as the photoelectric eye moves across the first. The needle is synchronized with the eye as to position on the drums.

The paper on the second drum is chemically treated so that it responds to small amounts of electric current by turning dark. A small amount of current causes it to turn grey; a larger amount turns it black.

Because the eye and the needle are synchronized, a dark spot on the original is repeated as a dark spot on the copy, appearing on both copies in the same location on the page. This makes it possible to copy anything which will fit on the first drum, including typed, written, or printed material, photographs, half-tones, drawings, art work, or even designs on cloth. The reproduction, of course, is in a single color, but in a variety of shadings. Colored material is reproduced in grey.

The facsimile process can be used to create single copies in this manner, or it can be adapted so that the needle, instead of burning dark spots on paper, punches holes in a stencil. Stencils cut in this manner may be run on any stencil-type duplicating machine. A further adaptation makes it possible to prepare masters for offset work in a similar manner.

The facsimile process permits preparation of single copies in about three minutes, but the machine need not be attended during this time. Some models can be set to turn out a predetermined number of copies in the absence of the operator. Preparation of stencils or offset masters requires about six minutes.

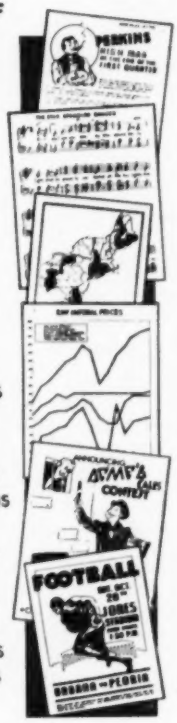
One manufacturer estimates the costs of operating his equipment as follows: For runs of twenty copies, using a stencil, about one-and-one-half cents per copy; for single copies, about seven-and-one-half cents. These estimates include depreciation, maintenance, la-

MAKE 120 BRIGHT COPIES A MINUTE
OF ANYTHING YOU TYPE, WRITE OR DRAW
...no stencils, no mats, no inking, no make-ready

NEW DITTO® D-10
WITH MAGIC COPY CONTROL
DIRECT "LIQUID" PROCESS DUPLICATOR

HUNDREDS OF USES

- SALES LETTERS
- BULLETINS
- MAPS
- PRICE SHEETS
- MENUS
- QUOTATIONS, BIDS
- POSTCARDS
- ESTIMATES
- BLANK FORMS
- SKETCHES
- STATEMENTS
- SPECIFICATIONS
- GRAPHS
- CONTRACTS
- MUSIC SCORES
- HOUSE ORGANS
- NOTICES
- RADIO SCRIPTS
- DRAWINGS
- EXAMINATION QUESTIONS
- NEWS RELEASES
- LESSON SHEETS
- REPORTS



The new Ditto D-10 provides the quickest, most economical and the most satisfactory way to make copies. It's ready for immediate use—no stencil to cut, no type to set, no inking, no make-ready.

It copies directly from the original writing, typing or drawing; one, two, three, four or five colors in one operation; 120 or more copies per minute; on varying weights of paper or card stock; 3" x 5" up to 9" x 14" in size.

PRINTS IN ONE TO FIVE COLORS AT ONCE

The sleek lines of the D-10 proclaim worthiness within. It has smooth, balanced action. It has wear- and corrosion-resisting stainless steel parts. With Magic Copy Control it prints each copy brightly. Sure and simple, it makes an expert of any user. Mail the coupon for a fascinating folder providing more details . . . free and without obligation.

DITTO, Inc., 2208 W. Harrison St., Chicago 12, Illinois
In Canada: Ditto of Canada, Ltd., Toronto, Ontario

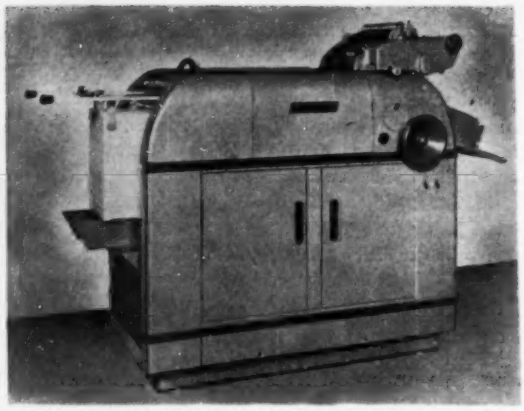
DITTO, Inc., 2208 W. Harrison St., Chicago 12, Ill.

Gentlemen: Without obligation,
( ) Please send literature featuring the new Ditto D-10 Duplicator and samples of work produced on it.
( ) Arrange a demonstration of the new Ditto D-10 Duplicator for me.

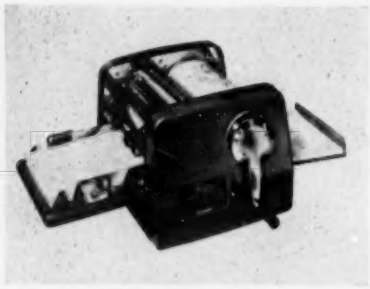
Name.....
Company.....
Address.....City.....
Post Office.....County.....State.....

Old Town's No. 9E

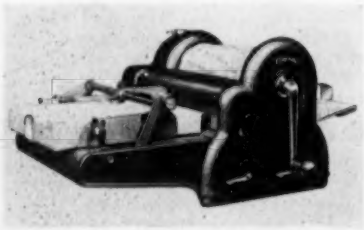
Smith-Corona's No. 918LEE



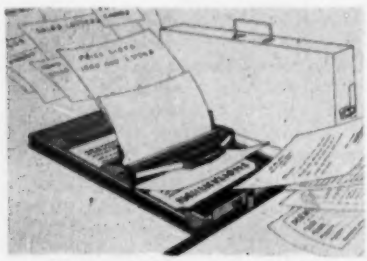
Addressograph-Multigraph's No. 250 "Multigraph"



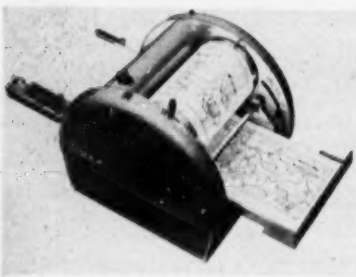
Heyer "Conqueror"



Wolber "Copy-Rite" No. L-54



Master Addresser's No. 101



Ditto's Model D-11

bor costs, and assume continuous operation during a ten-year period, using the 40-hour week as a basis.

The Equipment

Stenafax, Div. of Times Facsimile Corp.

Illustration. Page 44.
Model No. S-5.
Maximum Copy Size. On stencil, 8 by 14 in.; on plate, 8½ by 14 in.
Power. 115-volt, 60 cycle AC.
Features. Machine stops automatically when copy is finished; cabinet rides on two-inch rubber casters.
Dimensions. Height, 45 in.; width, 26½ in.; depth, 18½ in.
Price. $1,600, f.o.b. New York.

Winchester Industries Inc.

Illustration. Page 44.
Model No. C-360.
Maximum Copy Size. 8½ by 14 in.
Power. 115-volt AC.
Features. Machine stops automatically when copy is finished.
Dimensions. 21 by 13 by 12 in.
Price. $1,500.

Gelatin

The Process

The gelatin or "hectograph" process of duplication creates copies by transferring small quantities of aniline dye from a master to each copy. In this respect it is similar to the liquid process, except that in the gelatin method the dye is transferred first to a firm gelatin bed, from which the copies are made, whereas in the liquid process the master itself comes in direct contact with the copy paper.

Masters for the gelatin process are made by typing on any hard-surfaced paper, using a special hectograph ribbon, or by writing or drawing on the paper with a hectograph ink, pencil, or crayon. Masters may also be prepared by typing or writing through special carbon paper, in which case the carbon copy serves as a master.

The master is then placed face down on a gelatin surface, which is usually cloth-backed, and sufficient pressure is applied to transfer the dye to the gelatin. The gelatin is now, in effect, the master from which the copies are actually taken, this being accomplished simply by bringing the copy paper into direct contact with the gelatin.

Gelatin duplicators are of two basic types: flat-bed and rotary. In the flat-bed type, the gelatin surface takes the form of a roll stretched across the bed. In the rotary type, the gelatin is prepared as a film or pad and is fastened around a rotating cylinder. The machines can be equipped for automatic or hand feeding.

This duplicating method is probably the least expensive method available within the limits of its capacity. It can make copies only as long as the supply of dye on the gelatin lasts, since a portion of this dye is actually transferred to each copy sheet. The method is at its best in runs of up to 50 copies, since the copies grow fainter after that point, but it is possible to obtain as many as 100 copies, and sometimes more.

For best results, copies must be made within a reasonably short time after the original master is transferred to the gelatin, since the latter gradually absorbs the dye. This property, however, permits the gelatin to be reused many times. It is generally considered that the gelatin should stand about 24 hours before re-use, but in some cases it may be used again after

four hours. Masters can be used in some cases up to eight times.

Flat-bed gelatin duplicators turn out about twelve copies a minute if hand fed, or up to about 50 a minute if the machine is of the carriage type. Rotary machines can operate at speeds up to 75 copies a minute. Speeds vary with sheet size and with the strength of the dye on the gelatin, which, of course, diminishes during a run.

As many as eight colors may be printed at once. Of these, purple gives the best results.

The Equipment

Columbia Ribbon & Carbon Mfg. Co., Inc.
Illustration. Page 45.
Model No. 1.
Maximum Copy Size. 8½ by 14½ in.
Power. Hand.
Dimensions. Base area, approximately 12 by 24 in.
Price. $32.

The Heyer Corp.
Illustration. Page 45.
Model. "Efficiency."
Maximum Copy Size. 8½ by 14 in.
Type. Flat-bed.
Power. Hand.
Price. $34.95.
Other Models. A complete line.

Smith-Corona Inc.
Model No. 1418-C.
Maximum Copy Size. 22 by 33 inches.
Type. Flat-bed, with carriage.
Power. Hand.
Price. $365.
Other Models. Other flat-bed models are available in varying sizes and at prices ranging from $75 to $545. One is designed with a low stand and can be operated from a seated position.

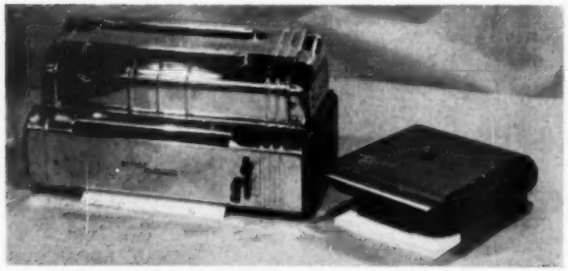
Liquid

The Process

The liquid process resembles the gelatin process in that both methods produce copies by transferring small quantities of aniline dye from the master to the copy paper. In the liquid process, however, this transfer is accomplished directly, whereas in the gelatin process the dye on the master is first deposited on a gelatin surface and the gelatin surface becomes, in effect, the master from which the copies are actually taken.

This similarity accounts for some confusion in terms. The liquid process is sometimes referred to as "liquid hectograph," which carries the implication that it is a hectograph process. The term "hectograph," however, is more properly applied to the gelatin process. The liquid method is also referred to as the "spirit" or "fluid" process, since it makes use of a fluid solvent containing alcohol.

Masters for liquid process duplication are prepared on coated paper of a high finish. A special carbon paper, coated with aniline dye, is placed face up under the master, and the master is typed on, or written or drawn on with a hard-point pencil, pen, or stylus. The pressure of the type or writing instrument against the carbon causes a quantity of aniline dye to be deposited on the back of the master wherever the pressure is exerted. The letters and other characters, of course, then appear in reverse. (*Next page*)



American Photocopy Equipment's "Auto-Stat"

Addressograph-Mutigraph's No. 81 "Multilith"

Heyer
has IT!
only $185 complete!
Plus Fed. Ex. Tax
1 Visible fluid supply—32-oz. tank—no pump!
2 Adjustable pressure control—longer runs.
3 Positive master clamp—easy to operate!
4 Automatic centering of print—new raise-and-lower control.
5 Eye-easy reset counter—just where you want it.
New!
CONQUEROR
SPIRIT
DUPLICATOR
with ALL the features:
6 Large capacity rotary feed—150 copies per minute!
7 Perfect registration—prints any size up to 9" x 15".
PRICED FAR LOWER THAN ANY COMPARABLE MACHINE . . .
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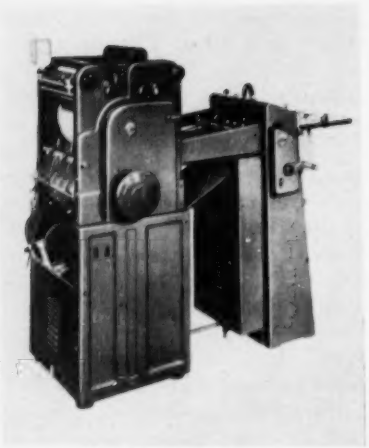
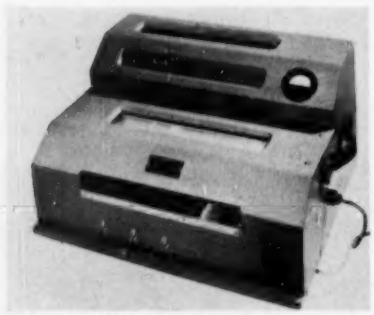
New York, 3 Los Angeles, 26



Davidson's No. 251

Copease "Duplex"



General Photo combination model

Copy-Craft "Photorapid"

Anken's No. 1 processor

The master is placed on the rotating drum of the duplicating machine. As the copy paper is fed into the machine, it is moistened slightly as it comes in contact with either a roller or a wick. The moistening agent is a solvent which has an alcohol base. Relatively little is applied, so that it evaporates quickly, but it is sufficient to pick up a thin layer of aniline dye from the master, and this dye remains on the copy paper.

Since each copy removes a small portion of the dye from the master, the copies become fainter as a run continues. It is generally agreed that a master can produce from 300 to 400 satisfactory copies, but runs of up to 600 copies have been claimed. The longest runs are possible when purple carbon is used. Five colors are normally available, all of which can be printed simultaneously, but purple gives the best results.

A number of manufacturers claim operating speeds of from 100-120 copies a minute, and one company lists a maximum rate of 200 copies a minute. Other makers, however, feel that this type of equipment produces the best results at speeds between 60 and 85 copies a minute. Copies are estimated to cost from one-quarter to one-third of a cent apiece.

The Equipment

Copy-Plus, Inc.

Illustration. Page 45.
Model. "Curvette."
Maximum Copy Size. 9 by 17 in.
Power. Hand.
Features. Resettable counter (optional); automatic liquid control; hand or automatic feed optional.
Dimensions. Height, 12 in.; the base measures 12 by 22 in.
Price. $174.50 list.
Other Models. Other models include the electrically driven "Micromatic," and the "Ambassador," designed for "block-out" duplicating and office system forms. Prices $159.50 to $545.

A. B. Dick Co.

Illustration. Page 45.
Model No. 220.
Maximum Copy Size. 8⅞ by 13½ inches.
Power. Hand.
Features. Automatic feed, automatic copy counter.
Dimensions. Length, 31 in., including receiving tray; width, 18½ in. including crank; height, 10 in.

Ditto, Inc.

Illustration. Page 48.
Model No. D-11.
Maximum Copy Size. 8½ by 13½ in.
Power. Electric. AC model supplied unless DC requested.
Features. Reset counter; automatic feed.
Dimensions. Height, 10 in.; length, 31 in.; width, 18 in. (Not including stand.)
Price. $345.
Other Models. No. D-10 is similar but is hand operated. Also available are four other models, varying in size and capacity, including No. D-45, a systems duplicator.

Duplicopy Co.

Illustration. Page 45.
Model No. A-44.
Maximum Copy Size. 8½ by 14 in.
Power. Hand.
Features. "Magic Fluid Flow," which is an automatic fluid feed; automatic paper feed; meter for counting copies.
Dimensions. Length, 14½ in., width, 15½ in.; height, 11 in.
Price. $169.50, list.
Other Model. No. H-44, a similar model with a hand feed.

Hectographia Corp.

Model No. AF 51.
Maximum Copy Size. 8½ by 14 in.
Power. Hand.
Features. Automatic feed; automatic liquid feed.
Dimensions. 19 by 15 by 9 in.
Price. $129.50., plus F.E.T.

The Heyer Corp.

Illustration. Page 48.
Model No. "Conqueror," No. 70.
Maximum Copy Size. 9 by 14 in.
Power. Hand.
Features. Reset counter; automatic feed; automatic fluid feed.
Price. $185, plus F.E.T.
Other Model. A new electric model, No. 76 is to be marketed shortly.

Master Addresser Co.

Illustration. Page 48.
Model No. 101.
Maximum Copy Size. 8 by 13½ in.
Power. Hand.
Features. This is a small portable model in which the master is laid flat, facing up. Copy paper is brought into contact with the master beneath a roller which is drawn across the bed of the

machine. The machine has a carrying case.

Dimensions. The base measures 9 by 18 in.; height is 4 in.

Price. $39.50.

Other Models. Other models include a post card printer.

Old Town Corp.

Illustration. Page 48.

Model No. 9E.

Maximum Copy Size. 9 by 17 in.

Power. Electrical; uses AC unless DC is specified.

Features. Reset counter; automatic feed; adjustable operating speed.

Dimensions. Length, 27 in.; width, 14 in.

Price. $580.

Other Models. No. 9S is described as a "school model" while No. 9H is a hand model. No. 14E is a wide capacity electric model, and No. 14H is a wide capacity hand model; they can handle material measuring 14 by 17 in. Prices range from $175 to $710.

Smith-Corona, Inc.

Illustration. Page 48.

Model No. 918 LEE.

Power. AC or DC.

Features. Copy counter; automatic feed.

Price. $630.

Speedliner Co.

Illustration. Page 45.

Model. "Speedliner" No. 74.

Maximum Copy Size. 8½ by 14 in.

Power. Hand.

Price. $84.50, plus $5.07 F.E.T., including supplies.

Note. These duplicators are the line formerly manufactured by the Speedliner Division of the American Photocopy Equipment Co. The Speedliner Co. purchased this division last year.

Wolber Duplicator & Supply Co.

Illustration. Page 48.

Model No. "Copy-Rite" No. L-54.

Maximum Copy Size. 8½ by 14 in.

Power. Hand.

Features. Automatic feed; reset counter.

Dimensions. Width, 19 in.; length, 28 in.; height, 12 in.

Price. $188.50, plus F.E.T.

Other Models. Two hand-operated and one electric Copy-Rite duplicators.

Multigraph

The Process

The term "Multigraph" is a trade name of the Addressograph-Multigraph Corp. The word has been used to refer to any of the office duplicating machines manufactured by that company, including those of the "Multilith" line. However, the term has been most widely used for a number of years to refer to a type of small printing press manufactured by Addressograph-Multigraph which operates on a principle quite different from those of standard office duplicators. It is this latter type of machine to which this section refers.

The Multigraph is a kind of small printing press, using movable metal type. The type, which is set by hand, is designed to fit into slots on the machine's rotating drum. The drum is then covered by a wide inked ribbon, and as the drum rotates, the type prints, through the ribbon, on paper fed into the machine. The resulting impression closely resembles standard typing; the Multigraph, therefore, is often used for form letters and similar material. Various type styles can be used.

The ribbon can be removed, however, and the type inked from rollers. Used this way, the Multigraph is actually a small printing press. It is often employed in this manner to print letterheads, illustrations, forms, etc.

Because typesetting takes more time than cutting a stencil or making a liquid or gelatin master, the Multigraph is best used on long runs. It is especially well adapted to work which requires periodical changes in the original material, as, for example, the prices in a price list. Its running costs tend to be slightly above those of stencil duplicators, but its work is generally superior in neatness and in its resemblance to original typing.

The Equipment

Addressograph-Multigraph Corp.

Illustration. Page 48.

Model No. 250.

Maximum Copy Size. Using ribbon, 7½ by 13½ in.; with wide ribbon and minor changes, width can be increased to 8⅛ in. Using ink, 8⅛ by 13½ in.

Power. Electric. Can be wired to use any local current.

Features. Automatic feed; feeder magazine with capacity of 5,000 sheets of 20-lb. paper; sheet detector, which by-passes double sheets; automatic re-

Eliminate 35%* of Your Typing with this new COPYING MACHINE

Ends Costly Outside Copying, too!

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Firm _____

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City _____ State _____

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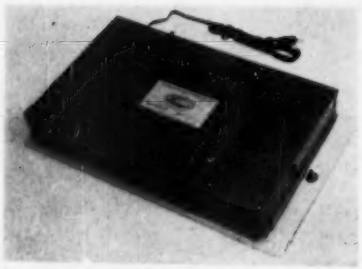
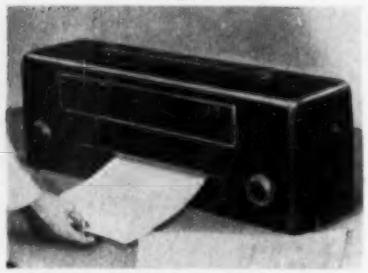
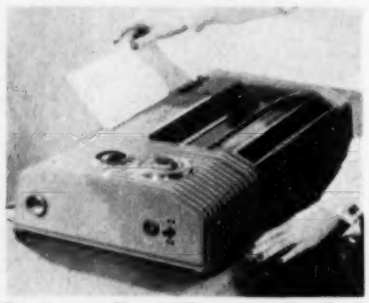


Ludwig "Contoura" printer

Cormac processor



Peerless "Dri-Stat" combination



Remington Rand "Transcopy Duplex"

set counter with capacity of 99,999; automatic ribbon reverse; variable speed, with speed indicator; automatic 12-roller style ink mechanism; leveling feet at each corner of machine.

Dimensions. Floor area, 27½ by 66 in.; overall height, 46 in.

Price. $1,880 to $2,100, f.o.b. Cleveland, plus F.E.T. and state taxes.

Other Models. Five other models.

Offset

The Process

The offset method of duplication, as used in the office, is actually a simplified form of photo-offset lithography, a printing process long used in the publishing industry. Both methods are generally referred to simply as "offset," although the office method is also known as "multilith," after the trade name "Multilith," which is the property of the Addressograph-Multigraph Corp.

Basically, this method works on the principle that oil and water do not mix. Thus, if a picture or a message could be prepared by merely drawing it with water on a flat surface, and if this surface were then exposed to an oily ink, the ink would stick only to the dry areas of that surface.

Since the ink would be "washed off" the moistened areas, the plate could then be used for printing the original picture or message.

This is exactly what happens in offset printing. The key to its success, obviously, lies in using a satisfactory method of writing or drawing with water.

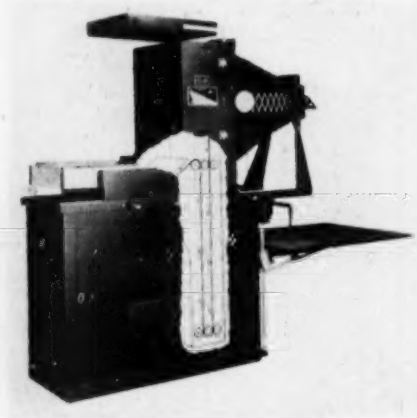
Actually, this can be done quite simply. It is merely necessary to write, type, or draw on a master with some greasy substance, such as a greasy ink, and then to bring the master into brief contact with water. The water is repelled by the inked lines, while the remainder of the master (the white areas) is moistened. In effect, the original message has now been written in water, or, more accurately, it has been written dry on a wet background.

Now it is only necessary to bring the moistened master into contact with an oily ink. The ink sticks to the areas that were originally inked, since they repelled water when the master was exposed to water, and it is washed off the areas that were originally white. The master is now ready to print.

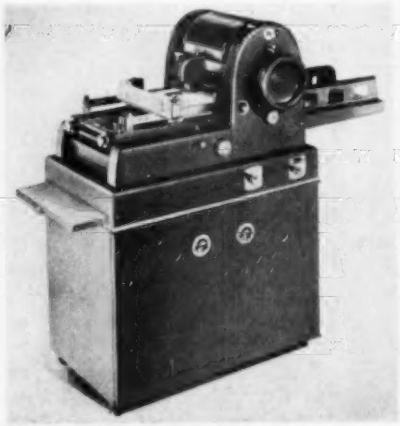
In order for the master to print successive copies clearly and cleanly, it must be re-inked for each copy. In order to be re-inked properly, it must first be moistened each time. The master, therefore, is clamped to a cylindrical drum. As the drum rotates, the master is passed first beneath a water roller and then under an ink roller. As it continues to rotate, the master is alternately moistened and inked, moistened and inked.

A refinement of the printing process now is introduced. The master, instead of printing directly on the copy paper, makes contact with a cylinder covered with a rubber blanket. The ink is transferred to this blanket cylinder. This cylinder is also in contact with the copy paper, and as it rotates, the ink is taken from the master and printed on the paper. This blanket cylinder, in other words, "offsets" the printing from the master to the final copy. It is the use of this offset cylinder that gives the process its name.

The offset cylinder, being rubber, presses the printed image firmly into



Haloid "Foto-Flo" model C



A. B. Dick's No. 450 "Mimeograph"

Addo's No. 500 "Roneo" model

the paper stock. Thus, half tone photographs can be printed even on rough paper.

The offset process is especially well suited to long runs, into thousands of copies, but it may also be used satisfactorily for runs as short as 50 copies. The maximum length of the run varies with the type of master used. Paper masters give the shortest runs—approximately 5,000 copies—while plastic and aluminum masters give the longest.

Masters are normally made for office work as described above, using typewriter or hand implements. They can also be made by photo-chemical processes, which makes it possible to duplicate photographs, letterheads, etc.

One of the special advantages of the process is that it permits simultaneous duplication both of a letter and the business letterhead, or of both a form and the filled-in contents of the form. Offset masters can also be made by xerography.

Corrections to a typewritten master can be made simply by erasing with a pencil eraser and retyping. While only one color can be printed at a time, inks are available in numerous colors.

Office offset equipment can turn out from 2,500 to 5,000 copies an hour. The work is of high quality, but it requires somewhat closer supervision on the part of the operator than do some of the simpler duplication processes.

Because the masters are easy to prepare, and because the results are excellent, this method is growing rapidly in public favor. Cost per copy is a fraction of a cent.

The Equipment

Addressograph-Multigraph Corp.

Illustration. Page 49.
Model No. Model 81 "Multilith."
Maximum Copy Size. 9½ by 13 in.
Power. AC. DC model available.

Features. Automatic or hand feed; operating speed variable from 2,500 to 5,000 copies per hour; reset counter; automatic ink feed; accurate registration to permit reruns in additional colors; optional side or rear delivery. The machine can be operated from seated position and can handle different sizes, shapes, and weights of paper, without changing adjustments.

Dimensions. Width, 20 in.; length, 43 in.; height, 35¾ in.

Price. $890 to $1,300.

Other Models. Six other Multilith models, varying as to size, capacity, and features.

Davidson Corp.

Illustration. Page 50.
Model No. 251.
Maximum Copy Size. 9¾ by 13 in.
Power. AC or DC.

Features. Operating speed variable from 2,400 to 5,400 copies per hour; automatic suction feed; double sheet eliminator; copy counter; automatic ink feed; accurate registration to permit reruns in additional colors. A noteworthy feature of this machine is that it can also be used for letterpress printing, by means of a simple exchange of certain parts. This makes possible printing from type, electrotypes, Linotype slugs, and rubber plates.

This model works on a two-cylinder principle. When the machine is used in offset work, the large cylinder is used for two purposes. The offset master is carried on one half of the cylinder, so that as it rotates the master is first moistened and then inked, as in standard offset work. The inked impression is then offset to a cylinder of exactly half the circumference.

As the smaller cylinder makes its second revolution (while the larger cylinder is making its first), it comes in contact with the second half of the larger cylinder. The copy paper is fed in at this point, and is pressed between the offset cylinder and the large cylinder. The large cylinder thus acts both as master and impression cylinder.

When used for letterpress work, segments of the larger cylinder are changed so they can handle type, plates, slugs, etc., for printing in the manner of a small rotary press.

Dimensions. Floor area, 28 by 61 in.

Price. Approximately $2,762, f.o.b. Brooklyn, N. Y.

Other Model. No. 241, which can be supplied in either an offset or letterpress version, or with interchangeable parts.

Photocopy

The Process

Photocopying is, of course, a photographic process, but the term "photocopying" is usually considered to be limited to those methods in which the images are made directly on sensitized paper rather than on film.

Photorapid

makes perfect copies in seconds!

SIMPLE—This newest development in photocopy machines, now available in one compact unit, 16½" x 23½" overall, with only one knob to turn, can be operated easily by any girl in your office.

HANDSOME—Glossy black with white trim — looks well anywhere.

ACCURATE—No matter how fine the detail, or what the colors, if you can see it in the original you will see it in the photocopy.

VERSATILE—Produces exact, letter-perfect copies up to 14" wide—whether the original is single or double sided, opaque or translucent, white or colored. Photorapid's legally accepted copies are ready for instant use, eliminating costly typing, hand copying and checking — or costly outside copying. With Photorapid you can make single side copies, double side (to reduce filing space), transparent copies for use as masters with diazo or blueprints, tissue copies for air mail — all at an unbelievably low cost. Also two-part models for copying from books without removing or injuring pages.

FAST—In seconds your finished, perfect copy is ready.

Write for details

Copy-Craft

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Closed tight when not in use — solution keeps longer. Non-metallic construction prevents corrosion.

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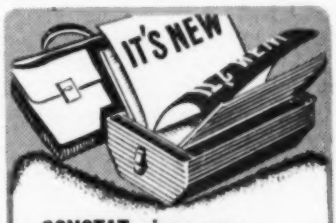

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Don't wait for copies; make 'em yourself in 40 seconds with the new *Portable* CONSTAT Copy-Maker! CONSTAT saves countless hours and dollars for lawyers, researchers, professional and business men and women. Copies letters, book pages, documents up to 8½" x 14". Light, compact. GUARANTEED. Prices: $39 to $161.50.

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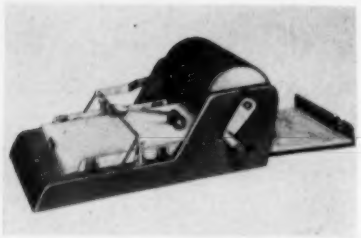
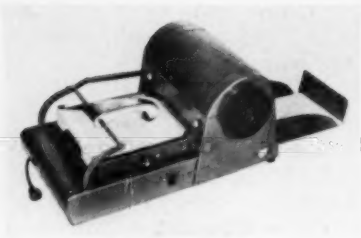
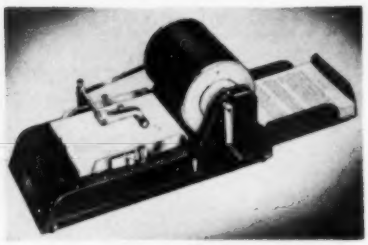


Dansen B-5 "Dynagraph"



Hart's No. 249



Heyer "Lettergraph" model C

Essentially, there are two photocopying methods. In one of these, the original material is placed in direct contact with the sensitized paper, while in the other a camera is used. Most office photocopiers operate on the first of these principles. The two methods may be explained as follows:

1. The first method, in which the original material is placed in direct contact with the sensitized paper, is itself capable of two applications, direct and reflex.

In the *direct* method, the sensitized paper is exposed to light passing through the original material. The letters, lines, and other dark areas of the original block the passage of the light so that the sensitized paper is unaffected by it. Where light strikes the paper, the paper turns dark. Thus, the first result of the exposure is to produce a negative, in which a standard letter would appear with white letters on a dark background.

If the original and the sensitized paper are placed face to face, the writing is reversed — in other words, it reads backwards. If the original is placed face up on the copy paper, and the latter also is face up, the copy will read correctly from left to right. In both cases the copies are negatives.

The direct method, obviously, is suitable for use only with material on translucent paper, with writing on only one side.

In the *reflex* method, the light rays pass through the sensitized paper from behind it, and are reflected onto its face from the original material. Since this is the method that must be used with original material having writing on both sides, standard office machines are designed to operate this way. Their operating instructions provide for placing the original and the sensitized sheet face to face. This, of course, produces a copy that is both negative and reversed, but the second step in the process reverses the reversed negative and produces a right reading positive.

In this second step, the negative copy is fed back into a processor with another sensitized sheet which will become the final copy.

The two sheets pass through a chemical solution which develops the image on the negative, and they merge from the photocopier pressed together. They are left face to face for about fifteen seconds.

The chemical properties of the final copy sheet are such that the image is taken from the negative during this period and transferred to the final sheet as a positive.

It should be noted that although this is considered a "dry" process, it is so only relatively. It requires the use of a liquid agent.

Copies made with equipment of this type cannot be enlarged or reduced in the process. Complete processing from original to copy normally requires from 30 to 60 seconds.

2. The second basic method consists simply of standard copying with a camera. This permits enlargement and reduction of the original material. Equipment of this type produces negatives which can be reprocessed if positives are desired. Generally a prism arrangement is used so that negatives read correctly from left to right.

Photocopying, using either method, is best employed where from one to 25 exact copies are desired. It permits duplication of original drawings, photographs, letterheads, etc. In small quantities, the process is faster than preparing typed copies or masters for reproduction by other methods.

Manufacturers estimate the cost per letter-size copy at between eight and nine cents.

The Equipment

American Photocopy Equipment Co.

Illustration. Page 49.

Model. Apeco "Auto-Stat."

Type. Combination printer and processor.

Maximum Copy Size. Width, 11 in.; length, unlimited.

Power. AC. DC units available.

Dimensions. 22 by 10 by 8 in.

Price. $380.

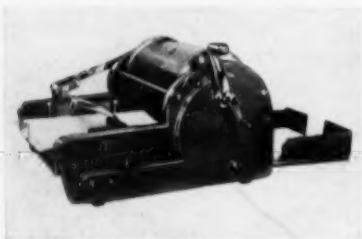
Anken Film Co., Inc.

Illustration. Page 50.

Model No. Anken "Processor" No. 1.

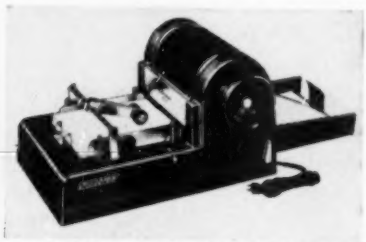
Type. This unit provides for a modification of the usual photocopying process. It is not, in itself, a complete transfer process, but it makes it possible to produce positive copies without having to use two sheets of sensitized paper.

This unit is used to process sensitized paper which has been exposed in the usual manner in any standard printer.



Print-O-Matic's No. 5-A

Post-O-Graf "Roswell" model



Speed-O-Print's No. 300 "Liberator"

Make Office Photocopies in Brighter Light on Peerless DRI-STAT *"Bright-Light"* Paper

NEW DRI-STAT "Bright-Light" paper offers, for the first time, office photocopying that truly deserves the name. Developed by Peerless Photo Products, Inc., DRI-STAT "Bright-Light" paper allows you to make sharp, clear, black-and-white photocopies of any original, under the normal levels of illumination in today's modern offices . . . fluorescent or incandescent light of fairly high intensity, or subdued daylight. Here, at last, is a paper that will give you good results under four to five times more light than you could ever work in before.

Now you can really make full use of transfer-process photocopying . . . the modern, quick, inexpensive method of making exact copies of anything written, drawn, or printed . . . anywhere in your office. No longer need you put up with the inconvenience of having to locate your photocopy equipment in an out-of-the-way corner, a stuffy closet or a crowded stockroom. When you use the new DRI-STAT "Bright-Light" paper, you can put your photocopy equipment right where you want it . . . right where it's most convenient and comfortable to use . . and get sparkling, clear, black-and-white copies, regardless of room illumination.

DRI-STAT papers give these amazing results not only on DRI-STAT equipment, but with almost every other type of transfer-process photocopying equipment now on the market. If you already have such equipment, try DRI-STAT papers and see the improvement!

You Save Time and Money with DRI-STAT

You can copy originals up to 11" by 17" in size on DRI-STAT equipment, or continuous strip matter up to 12" wide. Results are equally good from opaque or translucent originals, since copying can be done either by the reflex or the contact method.

DRI-STAT vellum paper can be used to produce a translucent "master" from which multiple copies can be reproduced by the diazo process.

DRI-STAT equipment takes up less space than a typewriter, can be used right in the department (or branch office) where photocopies are needed. The originals never leave your possession. Copies are ready in less than one minute, cost less than 10 cents apiece.

Convenient, Easy to Use

Anyone in your office can quickly learn how to make good DRI-STAT copies. No extra help with special training is needed. No darkroom is needed, and there are no messy trays of developing solution.

DRI-STAT papers and equipment are wholly manufactured in the United States, which means consistent quality and dependable delivery. DRI-STAT is sold only through factory-trained Peerless distributors, all of whom are well qualified to give you professional counsel on your reproduction methods.

Ask for a Demonstration

Try DRI-STAT papers on your own work. For a demonstration, call or write your Peerless distributor, or clip and mail the coupon below.

DRI-STAT

DRI-STAT Division
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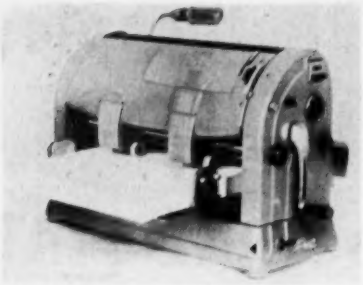
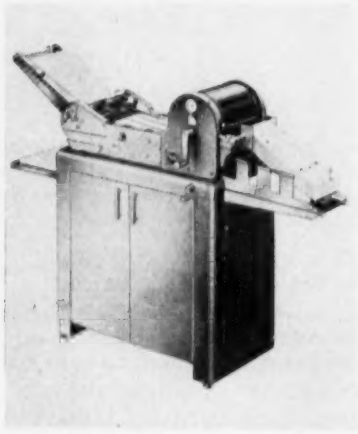


Rex-Rotary's No. D-270

Multistamp hand duplicator



Marr "20th Century" model E

Harding No. 160 "Geha Automat"

The original sensitized paper, however, is then fed, by itself, into the Anken unit, where it is processed and converted into a final copy. Special "Ankopositive" paper is used.

Either the direct or reflex methods can be used. Thus, if the original material is on translucent material and has writing on only one side, a right-reading positive can be produced directly on the one sheet.

If the original material is opaque, or has writing on two sides, the result is reversed. In this case, if a right-reading copy is desired, this copy is fed into the printer with a second sheet of the special-sensitized paper and the process is repeated.

Maximum Copy Size. Width, 14 in.; length, unlimited.

Power. 110-volt AC.

Dimensions. Width, 12 in.; length, 24 in.; height, 6 in.

Price. $375.

Copease Co.

Illustration. Page 50.

Model. "Copease Duplex."

Type. Combination printer and processor.

Maximum Copy Size. Width, 14 in.; length, unlimited.

Power. 110-volt AC; converter required for DC.

Dimensions. Length, 27 in.; width, 10 in.; height, 10 in.

Price. $434.

Other Models. Processors (developing units), both electrical and hand-operated; two printers (exposing units); and one plate maker. These vary in size. Printer prices are $119.50 and $199.50; processor prices range from $96.50 to $249.50; and the plate maker is priced at $590. The printers can copy pages of a book without removing the pages.

Copy-Craft, Inc.

Illustration. Page 50.

Model. "Photorapid" combination model.

Type. Combination printer and processor.

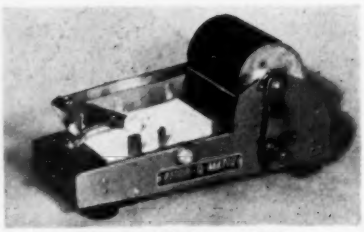
Maximum Copy Size. Width, 14 in.; length, unlimited.

Power. 110-volt AC.

Dimensions. 16½ by 23⅜ by 7½ in.

Price. $449.

Other Models. Printer and processor available as separate units at $149 and $171 for the printer (two sizes) and $200 and $227 for the processor (two sizes). The smaller units accommodate paper up to 8½ by 14 in., the larger units, 13 by 17 in. The printers can copy the pages of a book without removing them from the book.



Speed-O-Matic model

Cormac Industries, Inc.

Illustration. Page 52.

Model No. 14.

Type. Two units—printer and processor are separate.

Maximum Copy Size. Width, 14 in.; length, unlimited.

Power. 110-volt AC.

Dimensions. 23¾ by 9½ by 6 in.

Price. $399, list, including printer and processor.

Other Models. No. 9, with a copy width of 11 in., is priced at $339, including printer and processor. Printers can be used to copy pages from books without removing the pages.

General Photo Products Co., Inc.

Illustration. Page 50.

Model. "Exact-Photo-Copy" combination unit.

Type. Combination printer and processor.

Maximum Copy Size. Width, 12 in.; length, unlimited.

Minnesota Mining's "Thermo-Fax"

Power. 110-volt AC.

Dimensions. Width, 20 in.; depth, 15 in.; height, 10 in.

Price. $375.

Other Models. A processor, listed at $175, and hand operated units, priced from $105.

The Haloid Co.

Illustration. Page 52.

Model. "Foto-Flo" model C.

Type. Uses camera, which permits enlargement and reduction of original material.

Maximum Copy Size. 18 by 24 inches (print size).

Power. 115-volt AC or DC.

Features. Conveyor system by which prints move automatically through developer and hypo tray, assuring uniformity of processing, and eliminating print handling and agitation or paddling in the hypo tray. Warning signal to inform operator when print transport mechanism is clear enough to take another print. Automatic maintenance of developer level and strength. Automatic shutter timer and print counter. Developing time controlled at 45 seconds per print, but optional unit permits variations from 30 to 90 seconds. Prism arrangement to give right-reading copies; copies are negatives, but positives may be obtained by reprocessing the negative.

Installation requires water supply, and required accessories are wash tank and print dryer.

Dimensions. Length, 10 ft.; width, 2 ft., 6 in.; height, 7 ft., 6 in.

Price. $2,950, net, at shipping point. Accessories approximately $800.

F. G. Ludwig, Inc.

Illustration. Page 52.

Model. "Contoura."

Type. A portable printer, used normally with "Constat" processor, but can be used with wet process developing.

Maximum Copy Size. 8½ by 14 in. for legal-size model; 8 by 10 in. for research-size model.

Power. 110-120-volt AC or DC, adaptable to 220 volts.

Features. Can copy pages from a book without removing the pages; small and light enough to be carried in a brief case; carrying case available.

Dimensions. Legal-size, 9½ by 14½ by 2¼ in.; research-size, 8½ by 10½ by 2¼ in.

Before you buy any duplicator... check this list!

Nothing like it ... Gestetner Model 260, the only duplicator with *Continumatic* Inking.

✓ **Is it simple to operate?** Only with the new Gestetner 260 can you merely set the ink-density selector, dial the number of copies desired ... and let the machine do the rest!

✓ **Is it clean to operate?** Only Gestetner uses *paste* ink—from a tube that clips into the machine. No pads, cans, brushes—no fuss or mess.

✓ **A range of colors — easily changed?** Only Gestetner offers more than a dozen attractive colors which can be changed quickly, easily—with no need to wash rollers or drums!

✓ **Is the price right?** Most people are genuinely surprised at the Gestetner's low price—for a machine so beautifully designed, so sturdily built, with so many unusual advantages. See for yourself!

There is only one way to be *sure* you are getting the duplicator that best fits your needs ... *compare!* If you don't know the name of your nearest Gestetner dealer, use the coupon below. It will also bring your copy of a new booklet that will be valuable no matter what kind of duplicator you purchase.

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50 McLean Ave., Yonkers 5, N. Y.

Gentlemen: Please send me a copy of your new booklet "30 Ways to Get the Most from Your Duplicating Equipment."

Name _____

Company _____

Address _____

City, Zone, State _____

Price. Legal-size, $59; research-size, $39.

Other Model. Constat processor, which measures 6 by 12 by 4 in. and weighs 8 lbs., priced at $55.

Peerless Photo Products, Inc.

Illustration. Page 52.

Model. "Dri-Stat" Combination Printer and Processor.

Type. Combination printer and processor.

Maximum Copy Size. Width, 12 in.; length, unlimited.

Power. 110-115-volt AC.

Dimensions. Width, 21 in.; depth, 7 in.; height, 14 in., approximately.

Other Models. The flat-bed printer, pictured on page 46 of the January issue of this magazine, has a printing capacity of 9 by 15 in. and can copy pages from a book without removing the pages. The model A processor, with separate motor drive, is available in two sizes capable of handling unlimited lengths of material 12 or 18 in. wide. The model M processor has a 12-in. width capacity.

The Tupper-Peerless mobile copying camera uses wet process photocopying, and can make size-for-size or half-size copies. The copying cycle is automatic, with push-button control of lights, shutter opening, and paper travel. Copies are right-reading negatives, but positives may be produced by photocopying the negative. The manufacturer claims the unit will copy 400 to 500 originals an hour.

This camera is 18 in. wide, 50 in. long, and 52 in. high, weighs about 400 lbs., but is mounted on wheels so that it can be moved from office to office as required.

Remington Rand Inc.

Illustration. Page 52.

Model. "Transcopy Duplex."

Type. Combination printer and processor.

Maximum Copy Size. Width, 14½ in.; length, unlimited.

Power. 110- or 220-volt, 60-cycle AC. DC available.

Dimensions. Width, 15¾ in.; height, 6¼ in.; length, 21⅜ or 27½ in. (two models).

Prices. $410 and $575.

Other Models. Two sizes of the "Transcopy," a processor; two sizes of the "Portagraph," a printer which can copy pages from books without removing the pages.

Eastman's "Verifax"

Stencil

The Process

The stencil method of duplicating has been established for so long a time that the name "Mimeograph," which is actually a trade mark of the A. B. Dick Co., has come to be used widely (with a small "m") to mean any stencil duplicator.

This method makes use of the familiar device called a stencil. Letters, drawings, or other designs are cut in an otherwise impervious sheet, and when this sheet is placed over another and painted with ink, the ink passes through the openings and reproduces the design of those openings on the sheet beneath.

Stencils are easily prepared by typing (the typewriter ribbon is not used) or by drawing or writing with a stylus. The pressure of the type or of the stylus causes the soft coating of the stencil to be pushed aside so that ink will flow through the openings. Stencils can also be prepared by the facsimile process.

The master is wrapped around the rotating drum of the machine, ink is supplied to the inside of the drum, and as copy paper is fed into the machine and into contact with the drum, ink passes through the openings and makes an impression on the paper.

Stencil duplicators operate at speeds of up to 200 copies a minute. They can be used with inks of any color.

Two popular types of stencil are available. The wax type will make between 300 and 400 copies, but standard "dry" stencils are usable for up to 5,000 copies, and. further, are better suited to the copying of drawings or art work. Some stencils are considered capable of making up to 15,000 copies. A third type, photomechanical stencils, more difficult to prepare, can be used for hundreds of thousands of copies.

Manufacturers estimate that on long runs a stencil duplicator can turn out copies at a cost of about one-fifth of a cent per copy. On shorter runs it is considered not quite as inexpensive as liquid or gelatin duplicators.

The Equipment

Addo Machine Co., Inc.

Illustration. Page 52.

Model No. "Roneo" No. 500.

Maximum Copy Size. 8 by 13½ in.

Photostat "Instant Copier"

Haloid's Xerographic fuser, model X processor, and No. 1 camera

Power. 115-volt AC or DC. Can be hand-operated.

Features. Automatic feed; copy counter; automatic inking; pre-selector to stop machine automatically after desired number of copies have been printed; accurate registration; machine adaptable for use with short stencil, accommodating 37 lines of typing, as well as standard stencils.

Dimensions. Base area 21 by 20 in.; height, 50 in., including storage stand.

Price. $760.

Other Models. Other models vary in size and capacity. Prices, $187.50 to $1,135.

The Dansen Co.

Illustration. Page 54.

Model. "Dynagraph" No. B-5.

Maximum Copy Size. 7¼ by 10 in. (printing area).

Power. Hand.

Features. Automatic feed; semi-automatic inking.

Dimensions. Length, 17 in.; width, 14 in.; height, 7½ in.

Price. $39.50.

A. B. Dick Co.

Illustration. Page 52.

Model No. 450. (The term "Mimeograph" is a trade name of this company.)

Power. AC current, unless DC is specified. Can be hand operated.

Features. Automatic feed; automatic counter; semi-automatic ink feed.

Dimensions. Length, 46 in., including tray; width, 20¼ in.; height, 46⅞ in., including cabinet.

Other Models. A variety of other models, differing in size, capacity, and other features.

Gestetner Duplicator Corp.

Illustration. Page 44.

Model No. 260.

Maximum Copy Size. 8⅛ by 12½ in. Copy can be printed to within 1/16 in. of either side of the paper.

Power. AC or DC.

Features. Automatic counter which shuts off machine when desired number of copies have been run. "Continumatic" inking, which uses a special paste-like ink from a tube and feeds it automatically to the drum; the manufacturer considers the process unique and "completely clean" in operation. Variable speed control. Automatic feed.

Dimensions. Width, 15 in.; depth, 19 in.; height, 18 in.

Price. $635.

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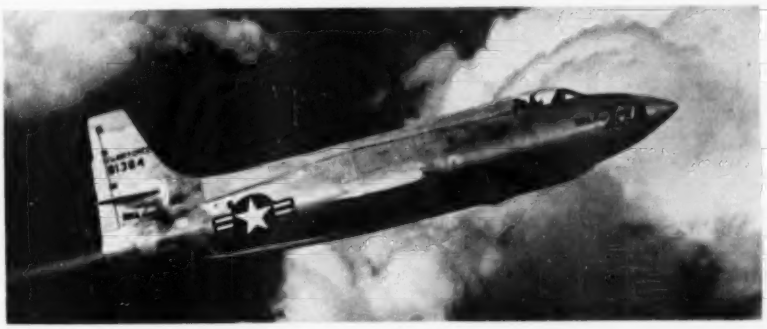
SPEEDS PAPERWORK!



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How XEROGRAPHY Cuts Duplicating Costs 33⅓%

FOR BELL AIRCRAFT CORPORATION

THE BELL X-1A is the world's fastest airplane. Xerography is the world's fastest, most versatile way to copy original material on to paper masters for offset duplicating.

Bell Aircraft Corporation cuts duplicating costs 33⅓% and speeds production of a vast variety of paperwork by using paper masters prepared by xerography.

Forms, letters, bulletins, charts, graphs, manuals, engineering drawings, government regulations or anything written, typed, drawn or printed can be reproduced with photographic accuracy in about 3 minutes on to an offset paper master for run off of multiple copies on an offset duplicator. Original copy may be enlarged, reduced or reproduced same size by xerography in XeroX Lith-Master* copying equipment. With xerography, copies can be made from one or both sides of original material.

For use in diazo type machines, translucent intermediates can be made from any original subject in the same speedy way.

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XEROGRAPHY
The fastest, cheapest, most versatile way to make masters for duplicating

Other Models. Other models, hand-powered and electric and varying in size, range in price from $227 to $995.

Milo Harding Co.
Illustration. Page 56.
Model. "Geha Automat" No. 160.
Maximum Copy Size. 8½ by 13½ in.
Power. 115-volt, 60-cycle AC.
Features. Automatic pre-set and cut-off counter to stop machine after desired number of copies have been run; automatic feed; semi-automatic ink feed using paste ink; air blower to clean lint from copy paper.
Dimensions. Floor area 24 by 28 in.
Prices. From $295 to $675.
Other Models. A hand-operated model, No. 75, and another electric model, No. 90-E.

The Hart Mfg. Co.
Illustration. Page 54.
Model No. 249.
Maximum Copy Size. 7⅛ by 13½ in.
Power. AC or DC.
Features. Automatic ink feed; counter which counts sheets only; positive registration.
Dimensions. Length, 29 in.; width, 17 in.; height, 15 in.
Price. $312.50, list.
Other Models. Several hand-operated models.

The Heyer Corp.
Illustration. Page 54.
Model. Model C "Lettergraph."
Maximum Copy Size. 8½ by 14 in.
Power. Hand.
Features. Automatic counter; automatic ink feed.
Price. $64.50, plus F.E.T.
Other Models. A complete line.

Keller Duplicator Co.
Model No. B-639.
Maximum Copy Size. 3 by 5 in. (Designed for post cards.)
Power. Hand.
Dimensions. Length, 12½ in.; width, 8½ in.; height, 5½ in.
Price. $17.95, including supplies.

Marr Duplicator Co., Inc.
Illustration. Page 56.
Model. "20th Century" model E.
Maximum Copy Size. 7¼ by 14 in.
Power. AC or DC. Can be operated by hand.
Features. Automatic feed; automatic counter which counts printed sheets only; automatic ink feed; automatic stop at end of run; accurate registration; variable operating speed.
Dimensions. Length, 56 in.; width, 20 in.; height, 46 in.
Price. $845, plus $50.70 F.E.T.
Other Models. Three hand operated models and three other electric models.

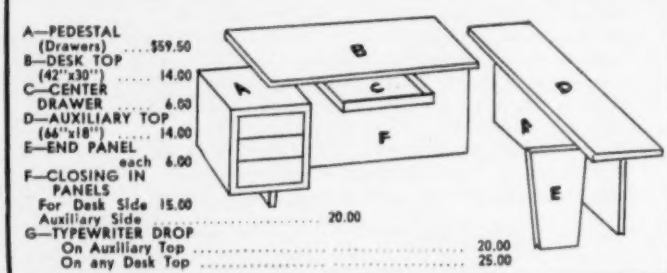
Mimeo Mfg. Co.
Model No. 175-Electric.
Maximum Copy Size. 7¼ by 14 in.
Power. AC or DC. Can be operated by hand.
Features. Reset counter; automatic feed; automatic ink feed.
Dimensions. Length, 30 in.; width, 16½ in.; height, 14 in.
Price. $327.50, plus F.E.T.
Other Models. Six, varying in size and features.

The Multistamp Co.
Illustration. Page 56.
Model. Hand stamp stencil duplicator No. 3 (postcard and large tag size).
Maximum Copy Size. 3-3/16 by 5¼ in.
Power. Hand, non-mechanical. This

modular desks

New way to buy more office space!

Combine D & L units for "custom made" efficiency—lower costs



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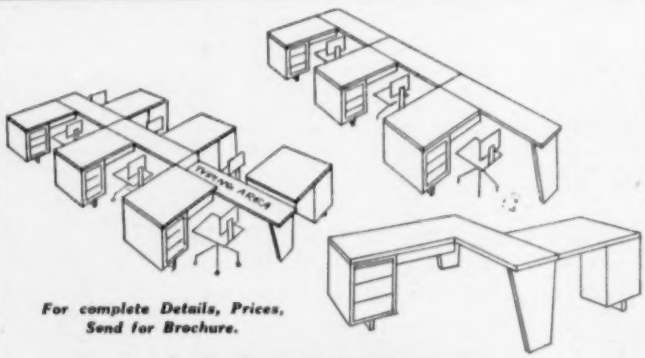

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Time for a Conference?

When there's work to be done . . . when ideas are needed . . . when minds have to mesh . . . the superbly designed new *Steel Age* Conference Desk is the perfect get-together, *think*-together meeting place . . . for visitors and for your own groups. The generous top extension at the back and both sides provides roomy working comfort for *everyone!*

There are nine attractive styles in all, from space-saving 45" interview desks to the spacious 76" executive model above. The Conference Line is the finest family of *Steel Age* desks we've produced in 35 years of crafting quality office furniture from steel . . . and well worth the treat of viewing *now* at your *Steel Age* dealer's showroom.

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model is actually in the form of a stamp, especially designed for use with post cards and for stamping forms, addresses, etc. on labels and packages.

Features. The manufacturer states that this stamp can produce 1,000 impressions without re-inking. It is intended to take the place of shipping labels. Stencils can be ordered in the form of labels, etc.

Dimensions. 4½ by 4¾ by 6⅞ in.

Price. $19.50 list, f.o.b. Norfolk, Va.

Other Models. Similar models, varying in size.

Post-O-Graf Mfg. Co.

Illustration. Page 54.

Model. "Roswell" legal-size duplicator.

Maximum Copy Size. 8½ by 14 in.

Power. Hand.

Features. Automatic feed; open cylinder, which permits selective inking.

Dimensions. Length, 28 in.; width, 14 in.; height, 10½ in.

Price. $47.50, list, plus tax.

Other Models. A similar model, priced at $42.50, is available in letter size, and both are offered in versions with hand feed for $10 less. The "Rapid" duplicator is of the hand stamp "rocker" type, suitable for printing postcards, etc.; it is available in two sizes, priced at $4.95 and $8.50.

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NEW YORK 7, N. Y.

Tools of the Office

The Print-O-Matic Co., Inc.

Illustration. Page 54.

Model No. 5-A.

Power. Hand.

Features. Automatic feed; copy counter; semi-automatic ink feed.

Dimensions. 18 by 12 by 11 in.

Price. $75.

Other Model. No. A-2.

Rex-Rotary Distributing Corp.

Illustration. Page 56.

Model No. D-270.

Maximum Copy Size. 8½ by 17 in.

Power. Electric and/or hand models available.

Features. Variable speed motor; automatic counter which can be used to stop machine automatically at end of run; automatic "pre-measured" inking, controlled by a selector dial; accurate registration; printing area to edge of paper.

Dimensions. Length, 19 in.; width, 12½in.; height, 19 in.

Price. $595.

Other Models. The D-270 is available in a number of modifications, with electric and/or hand power, with and without pre-measured inking, and varying in other features.

The Speed-O-Matic Co.

Illustration. Page 56.

Model. "Speed-O-Matic."

Maximum Copy Size. 3½ by 5½ in. (designed for post card work).

Power. Hand.

Features. Automatic feed, capable of handling post card stock.

Dimensions. Length, 12 in.; width, 4½ in.; height, 6 in.

Price. $15.95 list, including supplies.

Delivery. Immediate.

Speed-O-Print Corp.

Illustration. Page 54.

Model. "Liberator" No. 300.

Maximum Copy Size. 7¼ by 13⅞ in.

Power. AC or DC. Can be operated by hand.

Features. Automatic dual brush inking; two-speed motor; automatic shut-off when last sheet is fed; optional reset counter; optional closed cylinder; General Electric dual fans; accurate registration.

Dimensions. Length, 34½ in.; width, 16 in.; height, 12 in.

Price. $349.50. Optional reset count-

(*To page 67*)

The "PRESIDENT'S" File

A valuable addition to your office. Keep all your records under lock and key, away from prying eyes. Contains: Four regulation letter size, ball-bearing file drawers, two double drawers for 3 x 5 or 4 x 6 cards (6400 capacity) also used for leases, contracts or cancelled checks. Plus a secret vault for your valuables doubly protected by extra outer door with a 3-way locking mechanism. Vault has a 4" dial lock, only YOU know its combination. Made of heavy gauge steel. 37½" high, 31½" wide, 18½" deep. Olive green or Cole gray baked enamel finish.

No. 475 **$69.50**

Available in Grained Walnut, Mahogany or Knotty Pine finish **$12.50** addl.

ADVERTISED IN LIFE

Cole's "FILE VAULT"

This attractive safety cabinet will add dignity to your office. Will pay for itself in saving valuables. Contains: two regulation letter size, ball-bearing file drawers, two double drawers for 3x5 or 4x6 cards (6400 capacity) also used for leases, contracts or cancelled checks. Plus a secret vault protected by a 4" combination dial lock hidden from view by outer doors under lock and key. Also has three compartments for books and a large shelf 31¾" wide, 17" deep for supplies. Overall size, 60" high, 32⅜" wide, 19" deep. Olive green or Cole gray baked enamel finish.

No. 992 LETTER SIZE **$89.95**

No. 1092 LEGAL SIZE

Similar to above No. 992 but with two legal size instead of letter size file drawers. 60" high, 35⅜" wide, 19" deep.

$94.50

The above cabinets in Grained Walnut, Mahogany or Knotty Pine finish **$15.00** additional

Above are two fast-moving "Combination Units"... 20 other models available, send for illustrations.

Prices slightly higher in Texas, Colorado and West of the Rockies

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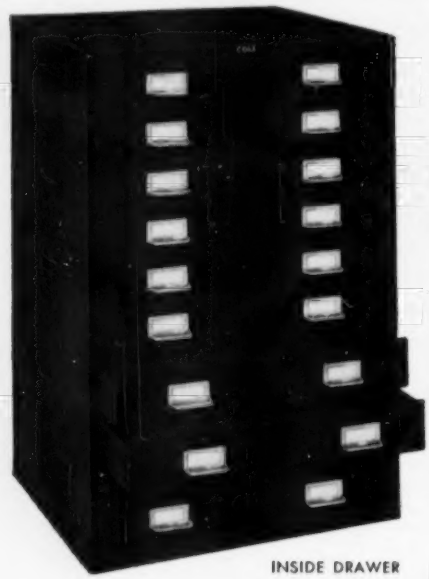

Cole's "SAMPLE" Cabinet

10 and 11 DRAWER UNITS

Gives protection to samples, drawings, art work, electros, etc. Roomy, smooth gliding bail suspension, steel drawers, for sizes up to 19" x 24" without folding. Green or Gray. 37½" high.

No.		INSIDE DRAWER Wide	High	Deep	CABINET SIZE Wide	High	Deep	Price
1722	10 DRAWERS	22⅞"	3"	17½"	25⅝"	37½"	18"	$59.95
1924	11 DRAWERS	24⅝"	2⅜"	19½"	27¾"	37½"	20¼"	74.50

"SALESMAN'S" DESK

This well made, beautifully finished steel desk is used where space is at a premium. Has 4 roomy drawers, an arm rest and a private compartment under lock and key. Perfect for receptionists and students. 40" wide, 29½" high, 18" deep. Cole gray or green finish.

No. 756 **$34.95**

No. 2414

STEEL STORAGE CABINETS

Will pay for themselves many times over as valuable money savers in locating and safeguarding important matter. For cancelled checks, drafts, catalogues, hardware, office forms, printed matter, artwork, cuts, photographs, tools, etc. Olive green or Cole gray baked enamel finish.

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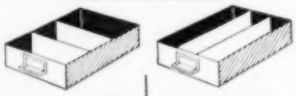

No. 55 for 2712
No. 655 for 2716

No. 66 for 2712
No. 666 for 2716

PRICE: 85c PER SET — Order by Number

No. 2712

$39.95

No.	Consists of	Size	Inside Drawer Wide	High	Deep	Outside Cabinet Wide	High	Deep	Price
2712	27 drawers	Letter Size	9	3½	12	30⅝	37½	13½	$39.95
2716	27 drawers	Legal size	9	3½	16	30⅝	37½	17	49.95
2414	14 drawers	Cancelled Check	10¼	4½	24	23½	37½	25	69.95
2773	27 drawers	Tabulating Card	7⅝	3⅜	24	26⅝	37½	25	79.95

LOCK which will lock all drawers of any of above cabinets . . . **$10.00** additional

Cabinets listed above are available in Grained Walnut, Mahogany or Knotty Pine Finish at **$12.50** additional

Prices slightly higher in Texas, Colorado and West of the Rockies

CUTS OR PHOTOGRAPHS OF ALL COLE PRODUCTS AVAILABLE ON REQUEST

COLE STEEL EQUIPMENT COMPANY
285 Madison Avenue, New York 17, N. Y.

COLE safe-type STEEL CABINET

Built for a life-time!

Will keep your office supplies and printed matter clean and orderly. As a storage cabinet for hand tools, or valuables, will pay for itself by preventing pilferage. Used in many factories to minimize the loss of raw materials such as silk, rayon or leather. Doors are equipped with a two-way locking device controlled by a paracentric lock. Five adjustable compartments. Size 76" high, 36" wide, 18½" deep. Olive green or Cole gray baked enamel.

ADDITIONAL SHELVES for above **$3.95** ea.

No. 76 **$59.95**

WARDROBE

With hat shelf plus rod for coat hangers

76" h., 36" w., 18½" d.

No. 76R

$59.95

Combination **WARDROBE and STORAGE CABINET**

76" h., 36" w., 18½" d.

No. 76C

$74.50

The "JUNIOR" File No. 198

Small enough to fit any nook, large enough to keep your letters, bills and personal papers neat and orderly. Two ball-bearing letter files PLUS a steel safety vault for your valuables hidden from view by an outer door under lock and key. Only YOU know the dial combination. Heavy gauge steel, 16" wide, 37½" high, 18½" deep. Olive green or Cole gray finish. Shipping weight: 65 lbs.

$49.95

The "SALESMAN'S" File No. 961

Contains: Two ball-bearing letter files, a double drawer for 3x5 or 4x6 cards (3200 capacity) also used for leases, contracts or cancelled checks. PLUS a secret vault for your valuables doubly protected by an outer door with a 3-way locking mechanism. Keeps all your records under lock and key. Heavy gauge steel, 16" wide, 43" high, 18½" deep. Olive green or Cole gray finish. Shipping weight: 78 lbs.

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No. 198 and No. 961 available in Grained Walnut, Mahogany or Knotty Pine finish at $12.50 additional.

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COLE STEEL EQUIPMENT COMPANY
285 Madison Avenue, New York 17, N. Y.

wrong way

Records thrown on shelves are hard to find, collect dust and take up 50% more room.

right way

Records in Prontos can be located in a jiffy... stay neat and orderly Doubles your filing space.

transfer to **pronto**

Save money, transfer into low cost Prontos and use your expensive cabinets over again.

. . . for less active files

There is a size made for every office record. These Pronto files are sturdily built of 275-lb. test fibre board, reinforced with steel on the shell and the four corners of the drawers as well. They cost no more than ordinary files! Can be interlocked into solid units and stacked to the ceiling. Beautiful in appearance, finished in olive green to match your regular office files. Will last a lifetime.

LETTER SIZE $3.55

LEGAL SIZE $4.35

CHECK SIZE $2.40

Prices slightly higher in Texas, Colorado and West of the Rockies.

pronto

STORAGE FILES

1212 **PRONTO FILE CORPORATION** 285 Madison Ave., N. Y. 17, N. Y.

(*Continued from page 62*)

er, $10. F.E.T. additional.

Other Models. Four hand-operated models varying in size, capacity, and features, in a price range from $29.50 to $179.50, plus F.E.T.

Thermo-Fax

The Process

The Thermo-Fax process is based on the physical fact that dark substances absorb more heat than do light substances. Material to be duplicated is placed beneath a waxy paper which is sensitive to heat, and infra-red light is then beamed through it. The printed or written areas on the original, being dark, absorb the light rays and convert them to heat. The Thermo-Fax paper is darkened where it is exposed to heat; thus, the original writing is, in effect, burned into the copy paper.

The copying process requires about 15 seconds. The cost per copy is estimated at between four and five-and-a-half cents.

Since original material is placed in direct contact with the copy paper, this process does not permit enlargement or reduction in size. Opaque originals, however, may be used, and no masters need be prepared. Additions to the original can be made after a run is started, and deletions also are possible.

The Equipment

Minnesota Mining & Mfg. Co.

Illustration. Page 56.
Model No. 12-C.
Maximum Copy Size. 8½ by 14 in.
Power. 110-volt, 60-cycle AC.
Dimensions. Width, 36 in., height, 40 in.; depth, 20 in.
Price. $422, list.

Verifax

The Process

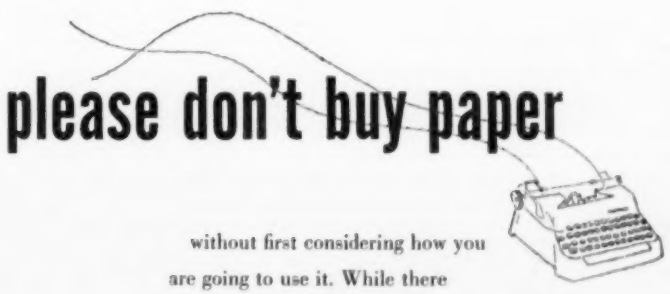
Verifax is a process introduced by the Eastman Kodak Co. last year. It is unusual in that it uses photocopying methods to produce copies on ordinary, non-sensitized, office paper.

The Verifax process begins in the manner of conventional photocopying. The material to be copied is placed face to face with a sheet of sensitized paper, which in this case is called a matrix. The two sheets are inserted into the printer and light shines through the back of the matrix.

As this light is reflected from the light and dark areas of the original, chemical reactions occur on the matrix somewhat like those occurring in the production of a photographic negative. The matrix, however, instead of becoming the conventional negative of standard photocopying, is used to print directly on standard office paper.

The matrix is first placed in an "activator" solution. As a result of chemical action, the portions of the matrix corresponding to dark areas (letters, numbers, etc.) on the original take the form of a dark substance, like a dye, which can be transferred to ordinary paper. The remainder of the matrix (corresponding to the white areas of the original) is now, in effect, "fixed" so that it cannot be transferred.

As the matrix emerges from the machine it is dried by squeegee action. It is placed face to face with a sheet of copy paper and the two sheets are pressed together by a roller. The "unfixed" dark areas of the matrix are transferred directly to the copy sheet, producing a positive copy of the original material.



please don't buy paper

without first considering how you are going to use it. While there is a slight difference in cost between the lowest grades of paper and the finest rag content paper, there is a world of difference in the paper itself.

When you need boxed typewriter papers for permanent records, letters that require prestige, and for other important uses, remember that the fine rag content papers —bond and onionskin—available at your Neenah Stationer were designed for enduring beauty. And for the finest in other office supplies, rely on your Neenah Stationer.

NEENAH BOXED TYPEWRITER PAPERS
Bonds and onionskins with from 25% to 100% rag content.
NEENAH PAPER COMPANY
Neenah, Wisconsin

Neenah TYPEWRITER PAPERS

At least three copies can be made from a matrix. The first copy requires 50 seconds, but once the matrix has been processed, three copies can be produced in a minute.

Since Verifax uses photographic principles, it is suitable for copying material that has been typed, written, drawn, or printed, including letterheads and art work. Opaque originals can be used. Costs per copy are estimated at less than four cents when three copies are made from a matrix. Single copies cost nine to ten cents.

The Equipment

Eastman Kodak Co.

Illustration. Page 58.

Model. "Verifax" printer, type 1, model C.

Maximum Copy Size. 8½ by 11 in.

Power. 110-volt AC or DC.

Dimensions. Length, 18¼ in.; width, 11¼ in.; height, 13 in.

Price. $240, list.

Photostat Corp.

Illustration. Page 58.

Model. "Photostat Instant Copier."

Maximum Copy Size. 8½ by 14 in.

Power. 110-120-volt, 60-cycle AC.

Price. $250, f.o.b. Rochester, N. Y.

Xerography

The Process

Xerography

Xerography differs from other duplicating methods in that it makes use of small electric charges.

A specially coated plate is given a positive electrical charge and placed in a special camera, where it substitutes for photographic film. The material to be copied is placed before the camera and "photographed" on this plate, with the difference that light falling on the plate does not produce chemical reactions, as in ordinary photography, but instead cancels the positive charge.

The areas which remain charged, therefore, correspond to the dark areas of the original. The result, in other words, is that the original message has now been "written" on the plate in positive electrical charges.

The plate is placed in a copying unit and a black, resinous powder, negatively charged, is passed over it. The negative charges of the powder are attracted by the positive charges on the plate. Consequently, the powder sticks to the plate wherever it is charged. The original message, in effect, has now been written on the plate in black powder.

A positively charged sheet of paper is then placed over the plate. The negatively charged powder is attracted by the new positive charge and is transferred to the sheet. The original material has thus been transferred to another sheet of paper, and it is now necessary only to "fix" the powder permanently on the copy paper. This is done by placing the paper in a "fuser" for a few seconds. Here it is heated, fusing the powder permanently.

Copies can be made on any kind of paper. Thus, in addition to single copies, translucent masters for diazo repro-

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Type is clearer, figures sharper, reading so much easier. A genuine pleasure for every hour at your desk! Improves efficiency. Relieves eye strain and fatigue. Smart, graceful arm extends fifteen inches from swivel ball. Turns complete 360 degrees. Provides maximum light wherever needed. Wafer-thin base never in the way. Solid brass combined with decorator colors. Sight-Light also supplied in floor, desk and table models.
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Name _____

Firm Name _____

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City _____ State _____

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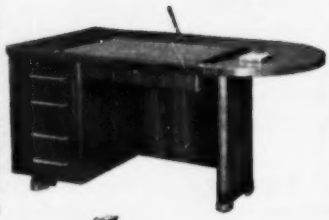
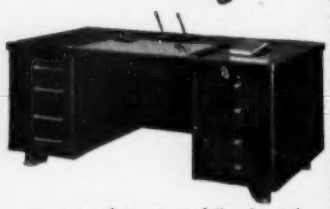


by Imperial



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duction and paper masters for offset duplication can be prepared.

Three units are required for the process—a camera, a copier, and a fuser. Since a camera is used, material can be enlarged or reduced as required. Opaque originals can be used, and the process can successfully duplicate art work, drawings, forms, etc., in addition to typing or handwriting.

Single copies can be prepared in two or three minutes. Offset masters require from three to five minutes but these can be used to turn out great quantities of work at the high speeds permitted by the offset process. Single xerographic copies are estimated to cost about nine cents.

The Equipment

The Haloid Co.

Illustration. Page 58.

Models. Fuser, processor model X, camera No. 1.

Maximum Copy Size. 8½ by 13 in. Maximum size which can be handled by camera varies with model. The No. 4 "Lith-Master" camera, which was pictured on page 65 of the August issue of this magazine, for example, can reduce 17-by-22-in. material to 8½ by 13 in., or can enlarge material to 150 per cent of its original size.

Power. AC. Can be converted to DC.

Dimensions. Of camera No. 1: width, 16 in.; depth, 31½ in.; height, 20 in.; of camera No. 4: length, 73 in.; width, 58 in. Of processor: width, 15⅛ in.; depth, 22½ in.; height, 19½ in. Of fuser: width, 14 in.; depth, 20 in.; height, 9 in.

Prices. This equipment is available only on a rental basis. With camera No. 1, $75 per month; with camera No. 4, $110 per month.

Manufacturers' List

Diazo Process Duplicators

Charles Bruning Co., Inc.
4700 Montrose Ave., Chicago 41

Ozalid, Div. of General Aniline & Film Corp.
13 Ansco Rd., Johnson City, N. Y.

Paragon-Revolute Corp.
117 South Ave., Rochester 4, N. Y.

Pease Co., The C. F.
2601 W. Irving Park Rd., Chicago 18

Peck & Harvey
5650 N. Western Ave., Chicago 45

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How YOU Can Labor Leisurely!

Office work is REAL labor, no doubt about that! But, if **you** are now enjoying the rest and relaxation **at work** that The Craftsman No. 1700 affords, you know the treat of labor with leisure.

Deft designing . . . and, soft foam rubber in the back and seat of this attractive, genuine American black walnut and Indiana quartered oak comfort chair—assure you that eased, resposed feeling.

At the end of your business day, you'll actually rise refreshed . . . far removed from the ranks of "the tired business man."

Why not drop in on your Craftsman Chair dealer today? If you don't know him . . . we'll tell you his name.

Just sit down in one of The Craftsman 1700's on his floor . . . you'll FEEL what it means to labor leisurely.

Jasper SEATING COMPANY
JASPER, INDIANA
OUR AIM: EXCELLENT WOOD OFFICE CHAIRS

Facsimile Process Duplicators

Facsimile & Electronics Corp.
Fourth and Passaic, Passaic, N. J.
Stenafax, Div. of Times Facsimile Corp.
The Biltmore Arcade, Madison Ave., at 43rd St., New York 17
Western Union Telegraph Co.
60 Hudson St., New York
Winchester Industries, Inc.
11 Park Place, New York 7

Gelatin Process Duplicators

Autocopy, Inc.
12150 S. Peoria St., Chicago 43
Beck Duplicator Co.
18 W. 18th St., New York 11
Columbia Ribbon & Carbon Mfg. Co., Inc.
Herb Hill Rd., Glen Cove, N. Y.
Graphic Duplicator Co.
473 Broadway, New York 13
Hectographia Corp.
110 W. 17th St., New York 11
Heyer Corp., The
1850 S. Kostner Ave., Chicago 23
Smith-Corona Inc.
701 E. Washington St., Syracuse 1, N. Y.

Liquid Process Duplicators

Copy-Plus, Inc.
2817 W. Carmen, Milwaukee 9, Wis.
Curtis-Young Corp.
110 W. 18th St., New York 11
Dick Co., A. B.
5700 W. Touhy Ave., Chicago 31
Ditto, Inc.
2243 W. Harrison St., Chicago 12
Duplicopy Co.
224 W. Illinois St., Chicago 10
Hart Mfg. Co.
2400 Endicott St., St. Paul 14, Minn.
Hectographia Corp.
110 W. 17th St., New York 11
Heyer Corp., The
1850 S. Kostner Ave., Chicago 23
International Duplicator Corp.
233 Park Ave., New York 17
Master Addresser Co.
6500 W. Lake St., Minneapolis 16.
Old Town Corp.
750 Pacific St., Brooklyn 17, N. Y.
Rex-O-Graph, Inc.
7840 W. Hicks St., Milwaukee 14.
Smith-Corona Inc.
701 E. Washington St., Syracuse 1, N. Y.
Speedliner Co.
4404 N. Ravenswood Ave., Chicago 40.
Standard Duplicating Machines Corp.
1935 Revere Beach Pkwy., Everett 49, Mass.
Wolber Duplicator & Supply Co.
1201 Cortland St., Chicago 14

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for mimeographing and spirit duplicating

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Your printer can demonstrate how colorful printed headings stand out on these new papers. And he'll help you choose the right Hammermill duplicating paper for your specific needs. See him when it's time to restock. For samples, write to Hammermill Paper Company, 1471 East Lake Road, Erie 6, Pa.

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NEW

WHIPPET MIMEOGRAPH AND WHIPPET DUPLICATOR

WHIPPET MIMEOGRAPH has now been given a sparkling new *blue-white look*. WHIPPET DUPLICATOR is a *brand-new* Hammermill paper—also made in a blue-white that commands attention. Both are an excellent value where looks of a job must be kept up and paper costs kept down. And both have uniform quality that is unusual at such low cost.

ASK YOUR PRINTER TO SHOW YOU HOW PRINTED HEADINGS FURTHER IMPROVE DUPLICATING PAPER'S APPEARANCE AND UTILITY.

No matter what type of material you reproduce on your machines, it can be more effective with printed headings. Ask your printer to show you how reports, price lists, sales letters, charts, bulletins all become more arresting, and easier to prepare, with the proper masthead.

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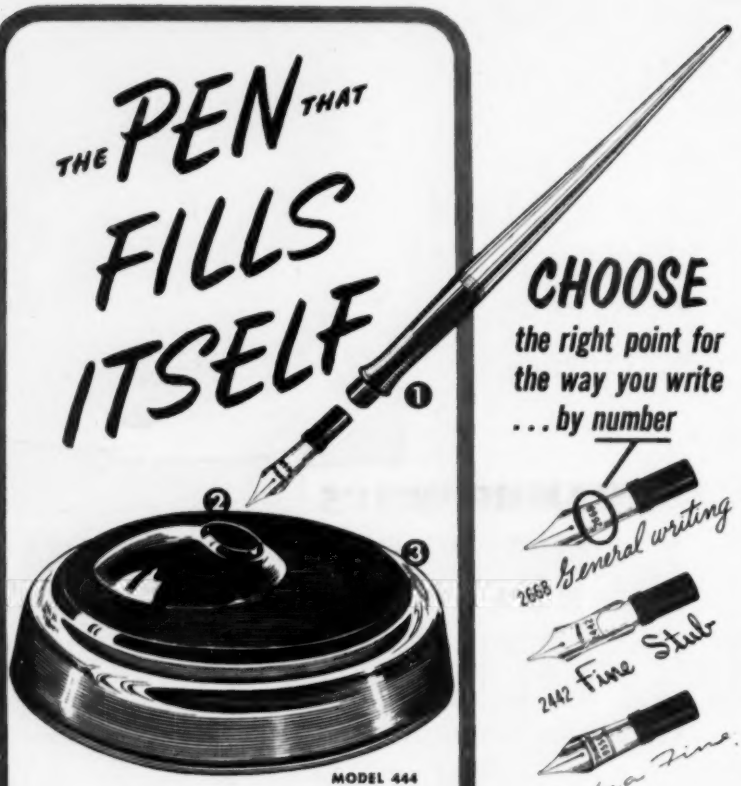

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The PERFECT desk set for busy desks. Pen always ready to write—automatically fills itself from giant ink fountain every time pen is returned to socket. Fountain-base needs ink only 4 times a year in normal use.

1. Finger grip never touches ink. No chance for ink to touch you.
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3. Fountain-base holds 40 times more ink than ordinary fountain pen. Won't leak. Won't flood. Easy to clean as a saucer.

Ask your stationer for a demonstration.

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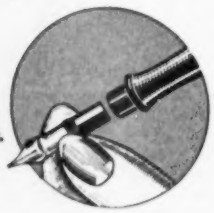
the right point for the way you write . . . by number



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Wright Duplicator Div.
See: Hart Mfg. Co.

Multigraph Machines

Addressograph-Multigraph Corp.
1200 Babbitt Rd., Cleveland 17, Ohio

Offset Duplicators

Addressograph-Multigraph Corp.
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Davidson Corp.
29 Ryerson St., Brooklyn 5, N. Y.

Mergenthaler Linotype Co.
See: Davidson Corp.

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American Photocopy Equipment Co.
1920 W. Peterson Ave., Chicago 26

Anken Film Co., Inc.
Newton, N. J.

Copease Co.
270 Park Ave., New York 17

Copy-Craft, Inc.
105 Chambers St., New York 7

Cormac Industries, Inc.
41 E. 42nd St., New York 17

Duophoto Corp.
30 W. 25th St., New York 10

General Photo Products Co., Inc.
General Photo Bldg., Chatham, N. J.

Haloid Co., The
Haloid St., Rochester 3, N. Y.

Hunter Photo Copyist, Inc.
566 Spenser St., Syracuse, N. Y.

Ludwig, Inc., F. G.
Deep River, Conn.

Orco Cameras
112 Liberty St., New York

Ormig Div., Queen Systems Corp.
1055 Stewart Ave., Garden City, N. Y.

Peerless Photo Products, Inc.
Shoreham, Long Island, N. Y.

Photostat Corp.
303 State St., Rochester 4, N. Y.

Remington Rand Inc.
315 Fourth Ave., New York 10

Stencil Duplicators

Addo Machine Co., Inc.
145 W. 57th St., New York 19

American Stencil Mfg. Co.
2714 Walnut St., Denver 5, Colo.

Autocopy, Inc.
12150 S. Peoria St., Chicago 43

Beck Duplicator Corp.
18 W. 18th St., New York 11

Bohn Duplicator Corp.
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Dansen Co., The
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Harding Co., Milo
432-34 W. Pico Blvd., Los Angeles 15
Hart Mfg. Co., The
2400 Endicott St., St. Paul 14, Minn.
Heyer Corp., The
1850 S. Kostner Ave., Chicago 23
International Duplicator Corp.
233 Park Ave., New York 17
Keller Duplicator Co.
545 E. Third St., Long Beach 12, Calif.
Marr Duplicator Co., Inc.
53 Park Place, New York 7
Mimeo Mfg. Co.
401 Broadway, New York 13
Multistamp Co., The
531 W. 21st St., Norfolk 1, Va.
Niagara Duplicator Co.
Box 1175, Concord, Calif.
Pekas Duplicator Co.
Lock Box 336, Lesterville, S. D.
Post-O-Graf Mfg. Co.
20 Garfield St., Wilkes-Barre, Pa.
Print-O-Matic Co., Inc., The
14-125 Merchandise Mart, Chicago
Rex-Rotary Distributing Corp.
19 W. 31st St., New York 1
Rutherford Duplicator Co.
P. O. Box 13087, Houston 19, Tex.
Speed-O-Matic Co., The
P. O. Box 427, Lomita, Calif.
Speed-O-Print Corp.
1801 Larchmont Ave., Chicago 13
Technygraph Co.
Techny, Ill.
Vari-Color Duplicator Co.
435-37 S. Lincoln Ave., Shawnee, Okla.
Windsor-Embassy Chemical Corp.
Milford, N. H.
Wright Duplicator Div.
See: Hart Mfg. Co.

Thermo-Fax Duplicators

Minnesota Mining & Mfg. Co.
900 Fauquier Ave., St. Paul 6, Minn.

Verifax Duplicators

Eastman Kodak Co.
343 State St., Rochester 4, N. Y.
Photostat Corp.
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Haloid St., Rochester 3, N. Y.

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Stapler, Tacker, Plier, Temporary-Permanent Stitch.

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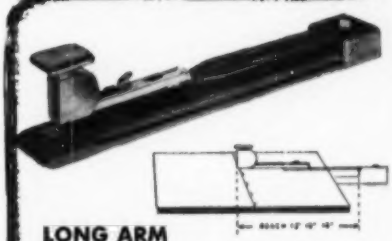
PLIER TYPE HAND STAPLER
Compact, portable for stapling papers at files and other hard-to-reach places.



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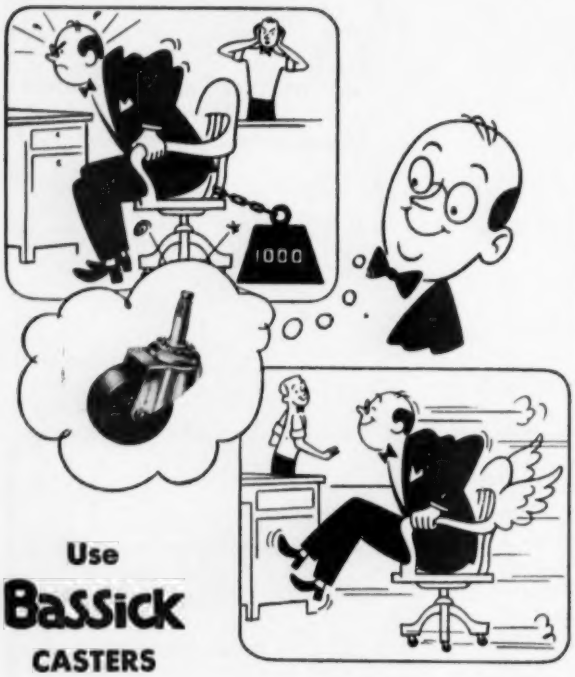

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- ✓ quiet-rolling
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• Protect your floors and make chairs easy-moving with Bassick "Diamond-Arrows" — most efficient casters made. Soft rubber or hard phenolic tread. THE BASSICK COMPANY, Bridgeport 2, Conn. *In Canada:* Belleville, Ont.

For wood-base chairs

For tubular-base chairs

For metal-base chairs

Bassick
A DIVISION OF STEWART SW WARNER
MAKING MORE KINDS OF CASTERS... MAKING CASTERS DO MORE

75 YEARS OF CASTER LEADERSHIP

U. S. Steel—

(*From page* 40)

(Here Mr. Moore described the use of bookkeeping machines and cash registers as data origination devices.)

Communications machines: At distributing and manufacturing location, there is an unusual system for controlling and consolidating ON HAND inventories at distributors' locations throughout the country. The maximum number of items carried in inventory at each location approximates 200 different models.

On Friday afternoon each week, distributing locations manually prepare an inventory report which shows the following information for each model:

1. Balance on hand previous week.
2. Received current week—factory.
3. Received current week—other source.
4. Dealer shipments only.
5. Stock on hand.

Totals, for control purposes, are prepared by class of model for each of the quantities shown on the report.

(Exhibit 6 was shown here at the conference.)

At the close of business each Friday, a manually posted inventory record is delivered to the nearest telegraph office. Here information is wired to home office of the manufacturer. A receiving machine is located in the manufacturer's office. This machine prints a hard copy of report, together with perforation of five channel tape. Tape produced is then processed through a card punch. This conversion from tape to card takes place on Saturday.

An average of 10,000 cards, representing inventories by model and distributor, are punched from five channel tapes received in the home office. These cards, when balanced to control, are combined with description cards and processed in tabulating machines to consolidate and print a weekly inventory status report.

The weekly consolidated Inventory Status Report is presented to the Board of Directors of the company at 8:30 Monday morning. Policy decisions pertinent to operation and manufacturing requirements of the business can be resolved through the medium of this report.

The same procedure could be used in many other types of businesses and applications: closing reports, production reports, bank balances, orders received, field payrolls, all types of urgent statistics. It is not necessary to have a private wire system to accomplish these results, but since data is transmitted over a public wire system, confidential data should be coded.

I want to re-emphasize the importance of recording data at the point of origin for use in subsequent processes.

The common language medium, five channel tape, provides:

1. Accuracy when processing data into and out of various machine systems.
2. Speed in transcribing data from one process to another.
3. Elimination of proofreading after accuracy of data has been established.
4. Automatic transcription of data.
5. Means for mechanizing all clerical functions.
6. Foundation for electronic data processing system.

(*This article will be continued in April*)

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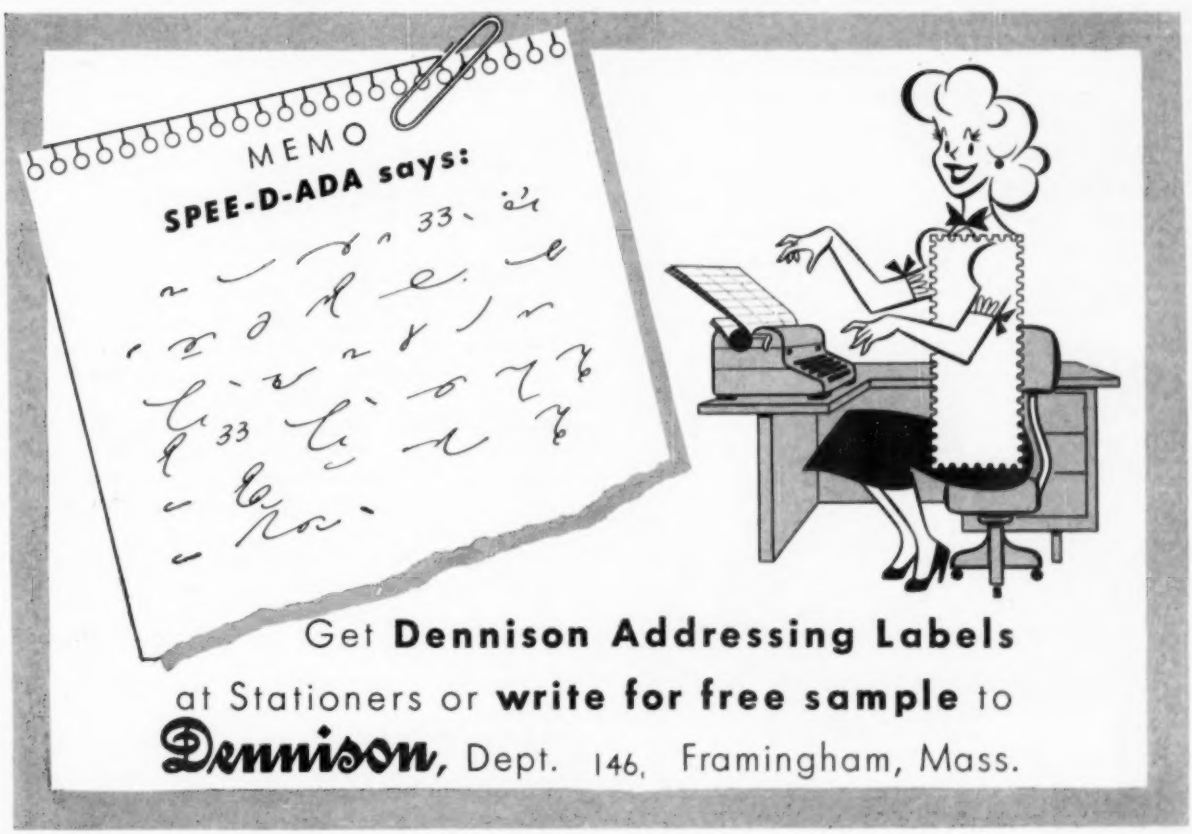

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at Stationers or **write for free sample** to

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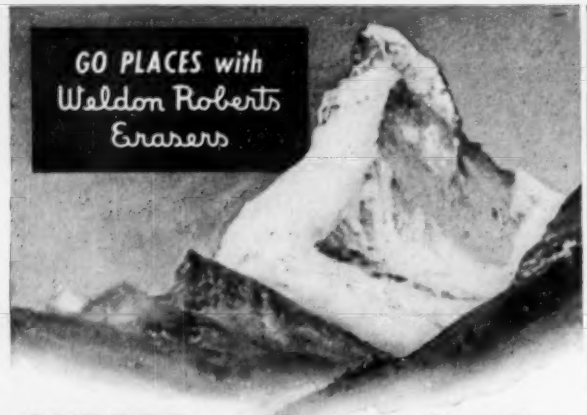

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The Swiss respect their superlatives. They specify Weldon Roberts Erasers, as do users the world over—to Correct Mistakes In Any Language—to assure uniformly superb erasing of all writing by hand and by business machines.

930 ENSEMBLE *(Pink & Gray Rubber). A combination eraser that does most everything. Handy, bias beveled shape. Soft, pink pencil rubber joined to soft, gray ink eraser. For ink, pencil and crayon erasing.*

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365 Sixth Avenue **Newark 7, N. J.**
World's Foremost Eraser Specialists

Weldon Roberts Erasers
Correct Mistakes in Any Language

Automation—

(*From page* 33)

Arnold: Let's give it an easy problem.
Herman: O. K. 2 x 2
Computer: 4
Arnold: Do it again.
Herman: 2 x 2
Computer: 4
Arnold: Do it again.

This keeps up for 5,328 times. On the 5,329th:
Herman: 2 x 2
Computer: 3
Arnold & Herman: What?
Computer: 3
Arnold: Do it over, Herman.
Herman: 2 x 2
Computer: 4
Arnold: We've learned something. This thing can make mistakes.
Herman: Right, so when it does, we'll put the problem through twice.
Arnold: That's fine with 2 x 2, because you can recognize a wrong answer, but how would you know if the machine was right when it told you $123\sqrt{456} = 789$?
Herman: That's right, Arnold, and besides, if one of the tubes went out it could keep making the same mistake over and over, unnoticed.
Arnoid: What we'll have to do is to duplicate the circuitry, so that if one circuit makes a mistake the other will give us the right answer.

Many more months pass, the extra circuit is installed, and the boys are ready to test again.

Herman: 2 x 2
Computer: 4 4
Herman: 2 x 2
Computer: 4 4
Arnold: Let's give it a tougher one.
Herman: O. K. 243^2
Computer: 59,049 59,069
Arnold: See! We've caught it in a mistake again.
Herman: Yeah! It's a good thing we have two circuits. Even though we have the wrong answer, we also have the correct one.
Arnold: Yeah, huh? Which is the right answer?
Herman: Gosh, I don't know! What'll we do?
Arnold: We'll beat this monster yet! What we need is a third circuit! Then the best two out of three wins!
Herman: Arnold, you're a genius!
Arnold: (modestly) I know.

After many more months, the third circuit is ready, and it is T-day again.

Herman: 2 x 2
Computer: 4 4 4
Herman: 3 x 3
Computer: 9 9 9

(*To page* 78)

"AMERICA'S STANDARD OF BUSINESS SEATING"

aluminum chairs

CUTTING COSTS

You can cut your office costs, by increasing your office efficiency. Properly seated office workers are more efficient—and therefore, less costly.

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Ogdensburg, N. Y.
In Canada: Acco Canadian Co., Ltd., Toronto

Arnold: (interrupting) 243^2
Computer: 59,049 59,049 59,069
Herman: See! Even though it makes a mistake, we know that 59,049 is the right answer! Our problem is licked!
Arnold: (unenthusiastically) Yeah!
Herman: What's the matter? Sick?
Arnold: Not exactly. I was just wondering, suppose two of them made the same mistake?

Certainly, the above is somewhat exaggerated. But as computer construction goes, it's not very far from the actual truth.

(The concluding installment of Mr. Waygren's article will appear in the April issue.)

Recession-proof buildings—

(From page 31)

General feeling of building owners who have used the service concerning its costs was expressed in a speech made by Fred H. McClintock, manager, Real Estate and Right of Way Department, Standard Oil Co. of California, following the council's work with that company in redesigning a 22-story extension of Standard's San Francisco headquarters building.

"It is significant that practically all of the changes recommended by the Building Planning Service have since been approved, and have been incorporated into our revised plans. We have saved thousands of dollars and will have a far more workable and efficient plant when completed.

"Anyone contemplating bulding at this time, or any time in the future just cannot afford not to utilize the Building Planning Service."

Where does he go from here?

(From page 29)

3. Require higher entrance standards for the course.
4. Counsel with business on applicants to the profession.
5. Strive for more scholarships, glamorize the profession; the results will be more and better potential executives.
6. Keep abreast of constantly changing business needs and continually review techniques.

Here again, I want to point out that schools can only help to raise our level.

There are many associations that are helping us to gain our recognition as office managers, but unless you participate and realize that it is through your efforts that recognition will come, we cannot raise our standards.

The Office Management Association of Chicago reached its 25th birthday on October 24, 1953. That represents some 25 years of progress in helping to bring the office manager into his rightful and respected position in business.

The National Office Management Association and all of its chapters, such as the Office Management Association of Chicago, are constantly reviewing ways to raise our level in the eyes of business. They too have done much along with organizations such as American Management Association, Society for the Advancement of Management, and many others.

(To page 81)

"You Don't Have To SOFT ROLLER ME When You Use The New AICO® TYPERITE INDEX TABBING With Pica Spaced Inserts!"

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IT'S THE SPACING THAT DOES IT

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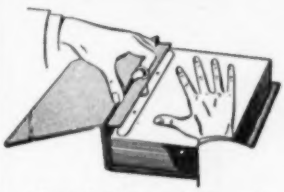

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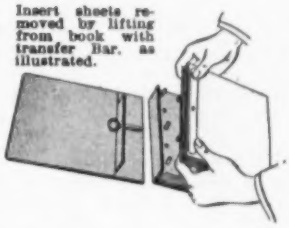

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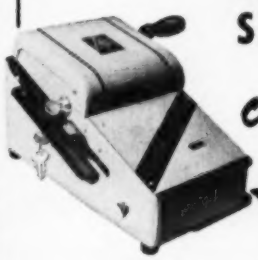

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Here again, these associations are helping by giving you the necessary tools but it is up to you to use them.

And now we are on the threshold of the next step, Administrative Management. Office Management is merely another description of our profession as it ascends to its rightful place in business.

I want to leave you with the most important thought of all — management and business, colleges and universities, along with associations, can help, and they can provide the tools, but the only people who can raise the standards of office managers are the office managers themselves.

Chicago Show—

(*From page* 34)

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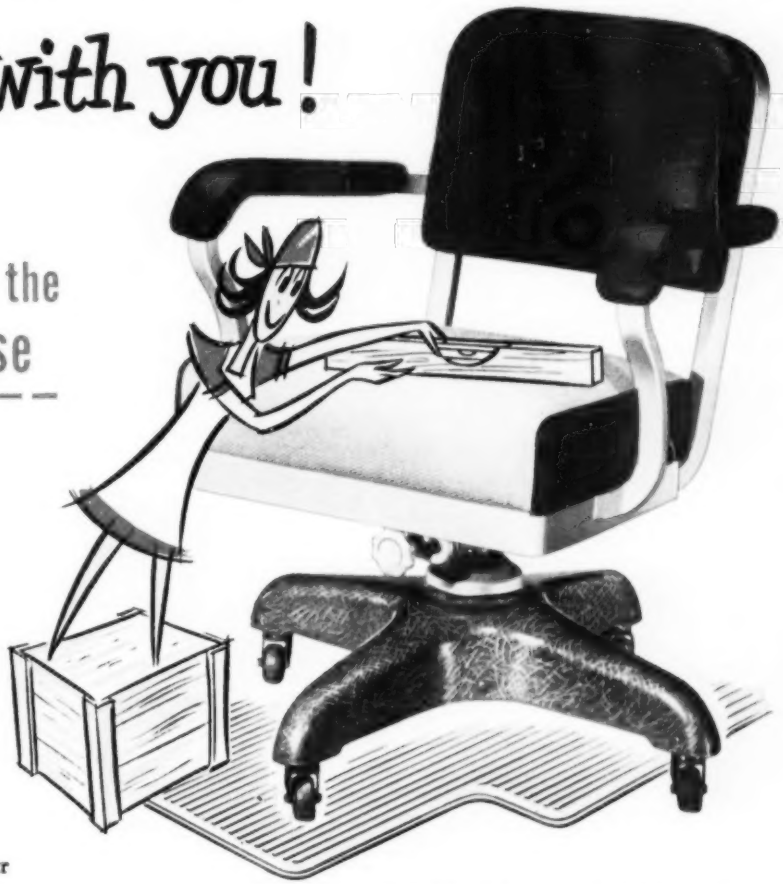

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